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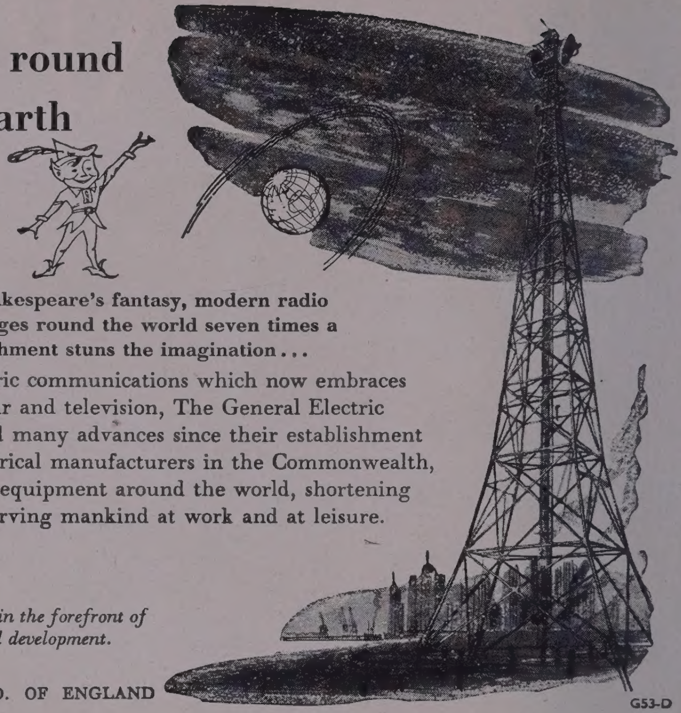
about the earth
in forty minutes”

(A Midsummer Night’s Dream)



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Geography and the Documentary Film

by ROGER MANVELL

Initiating a series of articles that we published in 1953-5, Dr Manvell, who is Director of the British Film Academy, referred to the value of film-making as an art "in which the artist, penetrating beneath the surface of life in his own or another country, uses the technique to throw fresh light on the essentials of that life as affected by geographical influences". He now introduces a further series of articles which will illustrate even more clearly this aspect of film-making

THE relevance of film-making to Geography can be shown in various ways; and in an earlier series of articles we have presented to readers of *The Geographical Magazine* evidence drawn mainly from the so-called "feature" films made in those countries where the film-making industry has reached an advanced stage of development as a medium of popular entertainment. Film-production of this kind is, of its nature, fictional: it is not primarily concerned to make statements of fact about the country in which it is produced. Nevertheless, as that series of articles showed, it has nowhere escaped the influence of environment; and, indeed, in every country where a large-scale film industry has developed, the film has come to afford a conscious or unconscious means of national self-portraiture, reflecting the national spirit, and in that sense to be 'indigenous'.

Now we propose to survey the growth and present status of another kind of film in the British Commonwealth and the United States: that which is known as "documentary", a word first used in this sense by John Grierson in a review written in America in 1926. He derived it from the French word "*documentaire*", the term currently used by the French to describe their travel-films. By implication a film thus named should present more directly than any other kind of film an accurate and understanding portrait of mankind. But the camera, like the pen, is an instrument entirely dependent on the purpose, skill and vision of the man using it, whether the pictures it takes make up collectively a revelation of the truth or a series of facile visual generalizations. The motion-picture camera is all the more dangerous because it has such a candid air about its living, active portraiture of places and people. It can show only too readily a brilliant surface scene, without any depth or understanding. Only the quality of the man employing the camera can bring understanding to what is so clearly depicted on the screen.

Think of a man with a movie camera seated in the glass dome of a helicopter. He can theoretically go out to every accessible place on the earth and film it from close quarters. He can observe men and women of every race at work or in leisure. He is the hovering observer—but he never sets foot on their earth, he never speaks to them of what their life means to them. All he has is a record of what they appear to be doing seen through glass.

The success of documentary in the development of human understanding depends at least as much on the man *behind* as on the man *in front* of the movie camera. In contrast to the fictional or dramatic story film it is, of course, primarily the film of fact, the film of interpretation at every level from that of the reporting journalist to that of the deep-seeing poet. It is the use of the roving eye of the movie camera to capture the most sharply revealing aspects of people in their own environments.

A documentary, like the fictional film, must always be understood in terms of the audiences for which it is intended. The manner in which documentaries can reach their audiences is far more flexible than the system of distributing feature films. It is true that some have always been shown in the cinemas, but these have usually to be shaped and presented in such a way that entertainment at least appears to be their chief purpose; for the cinema is a theatre designed wholly for entertainment. Yet true documentary has always been more closely allied to education; and many countries (including Britain in wartime) have adopted special methods of bringing the wealth of documentary, technical and instructional films to the most appropriate places for people to see them—the community social centre, the town hall, the church, the

ational Film Archives

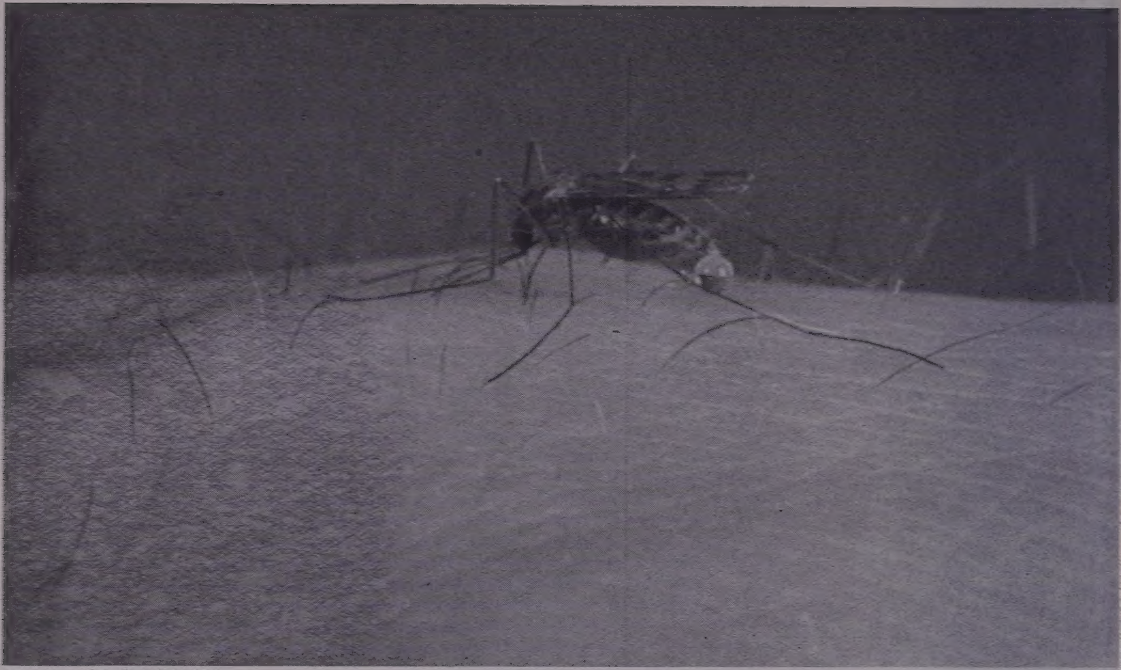
The achievement of documentary depends on the understanding that the man behind the camera brings to the life in front of it. This was seen (above) *in the Russian* Turksib *which showed the development of remote areas of Mongolia and* (below) *in* Drifters, *Grierson's study of the Scottish herring industry*

ational Film Archives

British Film Academy and Roger Manvell Coll

The documentary film-maker must interpret, with sympathy and skill, life both at home and abroad. Keene went to Assam to make A String of Beads (above) *a story of life on a tea-plantation; Rotha's* World of Plenty (below) *called for international cooperation in the production and distribution of food*

National Film Ar



By courtesy of the Shell Film Unit

The demonstration and illumination of scientific subjects through motion-picture photography and animated diagrams has become an increasingly important branch of instructional film-making: this shot is from a British film Malaria, *made for use wherever modern science combats that disease*

working man's club, the school, the factory, the technical college, institute and university, or the African compound. Now in men's homes there is developing a vast number of other screens, the domestic television sets, which are ideal for certain kinds of intimate documentary programme, using film as part of its method of production.

In other words, in the past thirty years or so in various parts of the world a visual network has begun to be built up capable of projecting the indigenous portraiture of mankind through motion pictures. In Russia it began in the early twenties, when both fictional and documentary films (dramatic reconstructions of phases of the revolution, films rhetorically celebrating the mechanism of farming, and so on) were dedicated to driving home to literate and illiterate alike the significance of the new Communist way of life. In Britain it began in the early thirties when gradually certain departments of Government and certain progressive industries began producing films as part of their public relations—though it took the war and Government sponsorship to establish a nationwide system of documentary film distribution and exhibition, for the most part outside the cinemas. In Canada the movement developed in the early forties (under John Grierson from Britain) and Canada now has one of the most effective national systems of documentary production, distribution and exhibition (both inside and outside the cinemas, as well as on television) that exists anywhere in the world. In America it has grown up fully in the post-war period; so-called documentary films, good, bad and indifferent, are poured out by the thousand to serve every interest imaginable (commercial, educational, humanitarian) and many of them are available for borrowing, like books, through regional film libraries. Each country develops its own tradition of production and use of these films, whether they are produced on a small, carefully considered scale (as in Holland) or in the abundant manner of America, where there are no generally recognized standards or values in documentary film-making, as there are, for example, in Canada. The two largest annual international displays of this branch of production take place each summer in Venice and Edinburgh. Between thirty and forty countries submit examples of their documentary films to the Edinburgh Film Festival each year.

How much, one may well ask, of all this celluloid activity is valuable? No-one claims that good films are more plentiful than good film-makers, but there is no doubt at all that there are many talented men and women at work on this kind of production in many different countries—not least in the British Commonwealth and the United States. A quality of observation and understanding which in other periods of history might have produced a novelist, a journalist, a dramatist or a poet can now find its outlet in documentary film-making. The post-war expansion of production internationally has obviously outstripped the talent available. Just as a good young journalist needs nurturing by a good editor who understands the traditional values behind writing for the press, so the documentary film-maker needs nurturing in a tradition which makes clear to him as he develops the values and responsibilities of his profession. Before he can learn to interpret human life through the camera he must learn what it is valuable to look for in the human scene before him. Almost every documentary film-maker of repute from the days when, first, Robert Flaherty and, subsequently, John Grierson were beginning their pioneer work, has learnt the rule that you must go and live with the people you seek to interpret through film. You may go for a long while (like Robert Flaherty's sojourns of two years or more for each film) or you may only go for a few weeks, but length of time is on your side. The values of traditional life in agriculture or industry, in art or craft, in anything worth calling civilization, go deep and cannot be discovered by the stranger (however professionally perceptive) over the weekend.

The professional documentary film-maker must learn (like the journalist and the colonial administrator) to work both at home and abroad. He will probably achieve, first of all, a particular kind of reputation—such as Paul Rotha for making hard-hitting films designed to challenge the lethargic public into thinking about the larger social problems with a national and international significance (*World of Plenty; World Without End*), or Basil Wright and the late Humphrey Jennings for making

There should be a close link between the documentary subject and the documentary audience, whether it is presented through the cinema or television. Often the audience is as interesting as the subject on the screen. Here British steelworkers watch an instructional film on the works floor

By courtesy of Dorman Long (Steel) Ltd films which reveal a poet's emotional appreciation of the underlying truth about the relationship of people to places. The interpretation through the movie camera of some detail of the life of one's own country for audiences either at home or abroad is a great responsibility, if only because the general public are always less critical of what is set before them on the screen than they are of the printed word. When, however, the documentary film-maker goes abroad to work, a new responsibility emerges: that of penetrating the foreign barrier to discover the true pulse of life. It is clear that the sympathy he has brought to understanding the people of his own land—nationally and regionally—will assist him in this more demanding task. The response may be a highly personal one, like that of Basil Wright to Ceylon in *Song of Ceylon*. This does not make it less valuable as a study of that people, both for themselves and for the rest of the world. It is desirable in the modern world to encourage the film portraiture of all nations both by their own film-makers and those from other countries. This is one path towards better international understanding.

Since the war, however, the nature of British documentary production has changed radically. The famous pioneer films of the thirties with their challenge about social problems and their dramatic and even, sometimes, poetic presentation of the facts about our industries, our agriculture and our communications have no successors today. The challenge now is quite different, and it lies in two main fields: scientific and technical interpretation and the objective interpretation of international problems. The first challenge is reasonably met. Each year Britain, largely through industrial sponsorship, produces many films on technical and scientific subjects which are sent all over the world. But the international challenge has still to find a proper response; this is the fault less of the film-makers than of the sponsors. Such films (which will deal with our international problems in the same effective style that we formerly evolved to deal with our national ones) can only be sponsored by the United Nations Organization, individual national Governments, wealthy international organizations and industrial concerns with world-wide interests. These are the films that the best film-makers of our time should be asked to make in far greater numbers—films like Basil Wright's and Paul Rotha's *World Without End*.

Obviously it is as important to develop for documentary satisfactory means of reaching the public as it is to ensure adequate sources of production. The weakness of the early prewar period of British documentary was its lack of any organized method of getting its productions shown. In wartime this was solved by the Government sponsorship of fleets of mobile cinema vans which toured every part of Britain and were routed by regional officers with a knowledge of local needs and interests. This was substantially the system adopted by Canada and to some extent used in certain British Colonial territories.

World Without End was the first major British-made documentary to have its world premiere exclusively on British television. There is no doubt that television is an ideal medium for a new kind of documentary presentation (often mixing material prerecorded on film with the 'live' interviews or visits to people and places outside the television studio). Many of the old documentary film subjects (health, housing, education, nutrition, the problems of industry and agriculture, etc.) can now be as effectively handled on television, with its relatively assured audience, as they formerly were on film alone. Television has come as a great opportunity to those whose profession is documentary, provided they can discover and develop techniques which will hold the attention of ordinary people in their own homes, and that adequate time is allotted to this kind of work by the various kinds of television authority growing up in different countries.

Perhaps because of experiences in the schoolroom, perhaps because of more recent experience under the lash of propaganda, a great part of the world's adult population has in its heart a fear of being instructed. Documentary has to overcome this chronic fear and the resistance it encourages in those whose prime concern is to retain maximum audiences for every television programme put out, instead of seeking to ensure that a proper balance is maintained between entertainment and information in the television services.

From the point of view of the widest public living in town, village, jungle, prairie or igloo, geographical understanding begins with acquiring some basic information about the world we live in and our true relationship to all its other inhabitants. This understanding is enriched when sympathy replaces curiosity. If documentary can help, as we believe it can, to create sympathy out of the presentation of the facts of living, then this will prove to be its greatest service to mankind.

Gough Island

by M. W. HOLDGATE

The Duke of Edinburgh's visit to remote Gough Island in the South Atlantic, due to take place this month, lends special interest to this account of the scientific survey of 1955-6 which the Duke encouraged and assisted. The Expedition was organized by Mr John Heaney and received a grant from the Geographical Magazine Trust Fund. Dr Holdgate, whose special field of study was invertebrate zoology, was one of the three leaders of the Expedition, latterly in conjunction with Mr Heaney

ONE of the longest mountain ranges in the world lies below the waters of the Atlantic. This range, the central Atlantic ridge, runs through 120 degrees of latitude, from Greenland and Iceland in the north to within a thousand miles of the Antarctic continent. Only a few of its peaks pierce the surface of the sea to form small, mountainous islands. The Azores, St Paul's Rocks, Ascension, St Helena, Tristan da Cunha with its outliers Nightingale and Inaccessible, Gough Island and Bouvet Island; these are the peaks of the range. They are all of them volcanic in origin and some, like Tristan da Cunha and Bouvet, retain a typical conical form. Others, like St Helena and Gough, have been eroded into a system of deep valleys and sharp peaks since the cessation of volcanic activity.

Many of these islands were discovered by Portuguese mariners during the period of their great explorations in the South Atlantic. St Helena was first sighted in 1502; and in 1506 the Admiral Tristão da Cunha discovered the island which now bears his name. Gough Island—as it is now called—was discovered at about the same time, and received the name Gonçalo Alvarez.

It was not until 1731 that Captain Gough, of the British ship *Richmond*, reported the discovery of a new island in the South Atlantic. Whatever he may have seen, it is quite certain that there is no land at all at the position he gave; but "Gough's Island" was shown on late 18th-century charts and the name was eventually substituted for that of Gonçalo Alvarez, which had been shown in the correct place for some two hundred years. A map of 1796, while naming both islands (in addition to Tristan da Cunha) labels their positions "doubtful" and thus reflects the sense of mystery surrounding many islands in the South Seas, especially the uninhabited ones that were the scene of shipwrecks never recorded. During the first eighty years of its history, the people of the settlement on Tristan da Cunha cared for the survivors of eighteen shipwrecks on the three islands of that group. One can only guess at the total loss of life and shipping on the uninhabited islands of the South Atlantic since those waters were opened for trade in the 16th century.

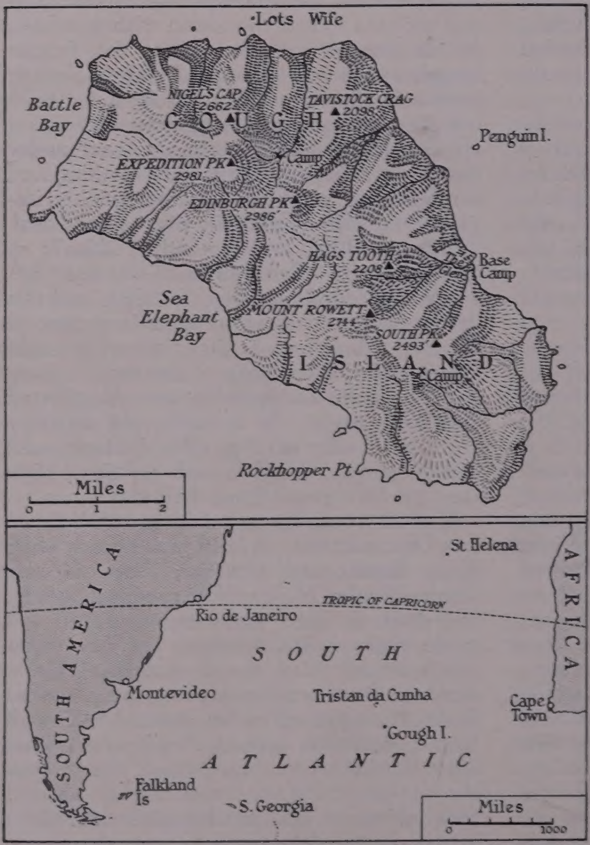
It would be wrong, however, to think of Gough Island and its neighbours merely as dangers shunned by all ships. During the great sealing boom of the 18th and early 19th centuries, many ships called at these islands and left parties ashore. In 1835, for example, the schooner *Emily* of Stonington "arrived at the islands [Tristan] on the 30th August, which place we left next day for Gough's Island and on the 5th Sept. landed one boat and six men to seal the island with provision for six months and returned to the Tristan islands to take oil and skins." These sealing parties lived in small huts, and, if we trust one sketch-map, must have built up quite a settlement. But they certainly lived under conditions of squalor, and their clothing and surroundings probably became quickly impregnated with a sickening reek of dead seal. "Ragged, filthy, and clothed in skins"; so the Captain of a British man-of-war describes a party he found on Gough in 1811, and this description must have applied to sealers in general. There was at that time no thought of controlled harvesting of the seals; young and old, males and females, were slaughtered indiscriminately. As a result, the industry collapsed early in the 19th century, and though parties visited Gough as late as 1892 they got little profit from their stay.

Up till 1904 no scientific party had set foot on the island. A little was known of its flora, fauna and weather, since George Comer, leader of one of the sealing parties, had been a keen amateur naturalist and made many notes. Among his discoveries was a strange bird, a rail, something like a common moorhen but lacking the power of flight. This proved to be confined to Gough Island, and was named *Porphyriornis comeri* after its discoverer. But, quite apart from the interest which any remote and unmapped area will have, Gough Island, like its fellows in the central Atlantic, is of special concern to biologists. For these volcanic islands arose by eruptions in mid-ocean, and have never been linked to any continent by land-bridges. Their fauna and flora have reached them by migration across the sea and a study of the species that have made this journey tells us something about the methods of animal and plant distribution. If, for example, all the plants have very light seeds, then it is likely that they reached the island as seeds carried by the wind. Hooked seeds, on the other hand, are more suggestive of transport attached to birds. Another interesting feature of remote islands is that, once they have arrived there, animals and plants are effectively cut off from interbreeding with those of the outside world. Evolution often takes a peculiar course on such islands, leading to the the production of so-called "endemic" species; species which occur nowhere else in the world.

From these two aspects, distribution and evolution, therefore, remote islands have a fascination for the biologist. Between 1904 and 1954 four scientific expeditions called in at Gough Island. The *Scotia*, with the Scottish National Antarctic Expedition, called in 1904 and a party was ashore for one day. In 1922 the *Quest*, carrying Shackleton's last expedition, landed a party which spent several days on the island, climbed one of the chief peaks and collected a number of specimens. In 1927 the Royal Research Ship *William Scoresby* paid a brief visit; and in 1935 a Norwegian expedition collected more specimens, particularly of plants. But these collections did little more than show that Gough Island had a rich fauna and flora and would repay detailed investigation.

It was not until 1954 that an expedition was formed with the object of carrying out this detailed study. Mr John Heaney, the organizer, intended to cover as many fields as possible and selected personnel competent in geology, botany, zoology, meteorology and survey work. The expedition, named the Gough Island Scientific Survey, was composed of eight men, seven being English and one South African. We left Cape Town in September 1955, aboard H.M.S. *Magpie*, and landed on Tristan da Cunha on October 1. Six weeks were spent here and on November 12 the party boarded the fishing vessel *Tristania* for the last 200 miles of our journey. The *Tristania*, with the *Frances Repetto*, fishes for crawfish around the coasts of the Tristan group and Gough each summer; both ships belong to the Tristan da Cunha Development Company which has done much to strengthen the economy of the islands in recent years. A landing was made on Gough Island on November 13, and a sectional wooden hut was erected as a base, on level ground just above the landing-place.

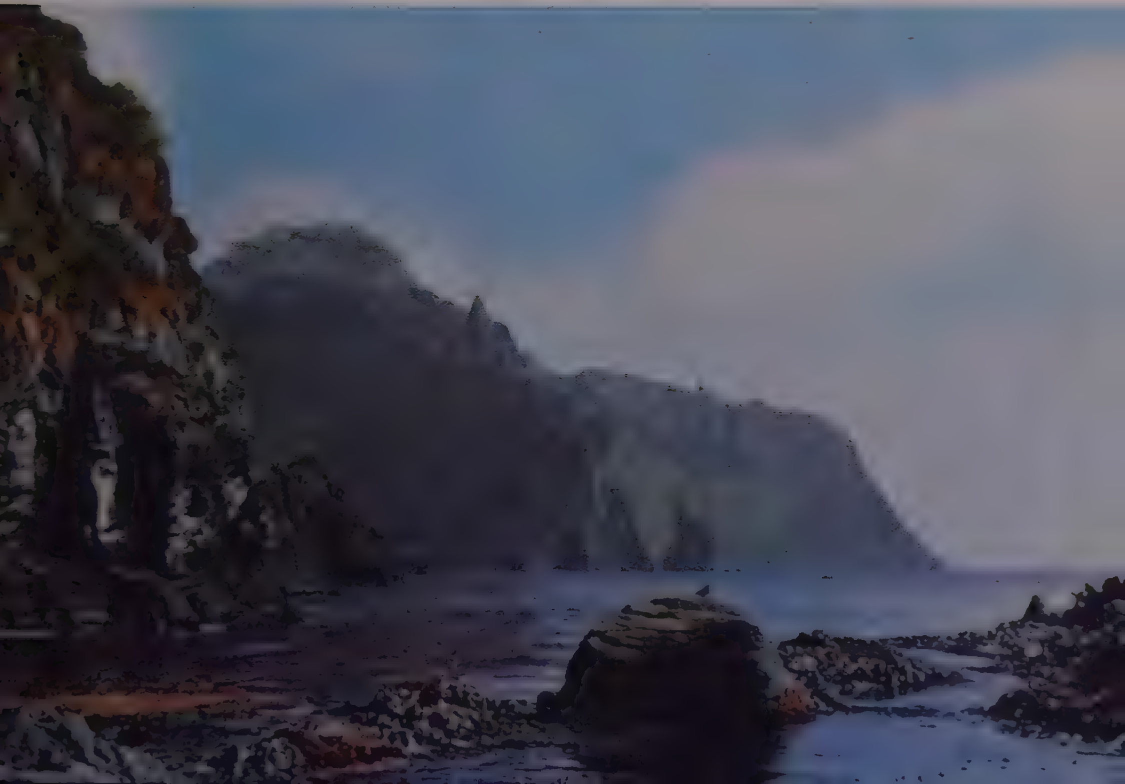
This landing-place lies in the mouth of The Glen, the largest of a series of valleys opening on the eastern coast of the island. Most of these narrow valleys end in sheer cliffs, between 100 and 500 feet high, over which the streams draining them fall in spectacular cascades. But The Glen itself has been eroded down to sea level and contains about an acre of flat land some thirty feet above the beach, well sheltered from all quarters except the east. This site had been used by sealers in the 19th century and by a party of diamond prospectors who spent



A. J. Thornton

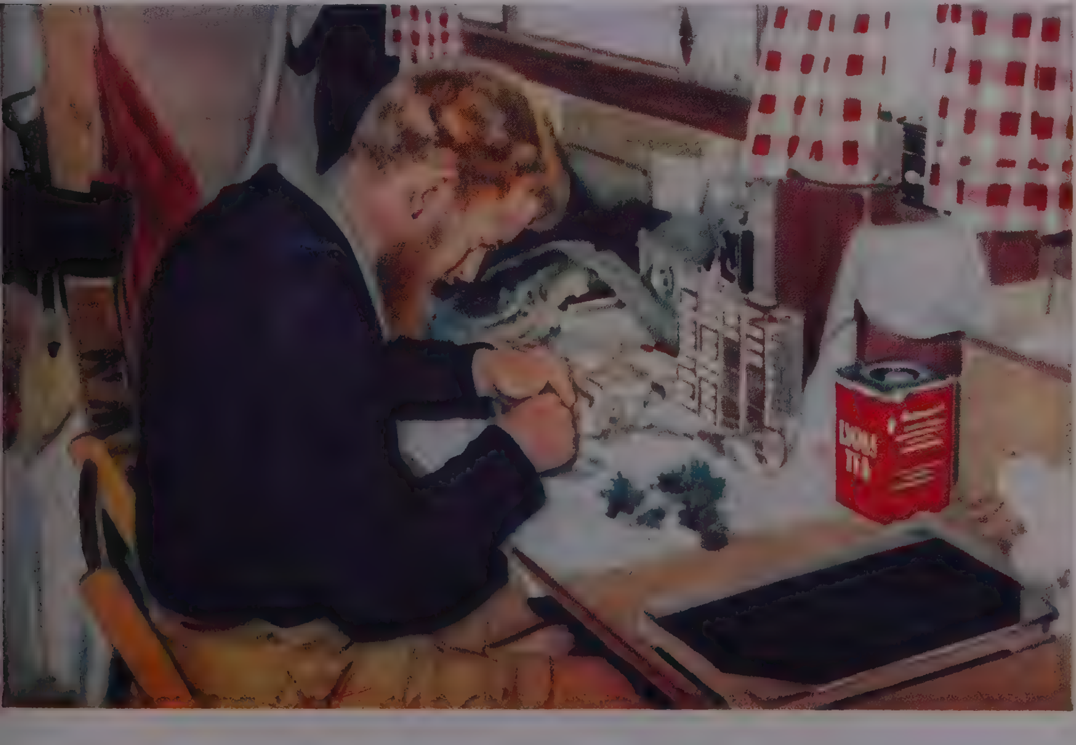
All Kodachromes from the Gough Island Scientific S

(Above) *The summit of Gough Island. Michael Swales, Expedition zoologist, looks across the central plateau to Edinburgh Peak.* (Below) *"The contour of this whole island is steep" : an English sea-captain's words of a hundred years ago are borne out by a view of the 1000-foot cliffs along the east coast*



One of Gough Island's few good landing-places lies in the mouth of this narrow Glen. The Expedition's base hut stands above the beach, with rugged forested slopes mounting on either side of it

(Above) *The hut, taken out from England in prefabricated sections, proved very comfortable and weather-proof. It now forms part of a South African Weather Station. In the background is the Hag's Tooth.* (Below) *Nigel Wace, Expedition botanist, examines some plant specimens in the hut*



(Above) *A halt for a rest during the long climb out of The Glen. The party is near the upper limit of the forest; only scattered trees and tree-ferns crown the ridge. Harold Green, on the left, is one of the four Tristan Islanders employed at different times by the Expedition. In the centre is the author and Wace is on the right.* (Left) *Gough Island's vegetation has bright colours despite the lack of showy flowers. The chief plants in this photograph are crowberry* (Empetrum rubrum) *and mosses.* (Opposite) *The Hag's Tooth, a weathered plug of trachyte rock filling an old volcanic vent, dominates The Glen. Behind it rise the dark basalt crags of Mount Rowett. The lower slopes are clothed in dense forest of the "island tree"* (Phylica arborea), *seen also in the right foreground*

Above: Courtship-display and young albatross—a moment spectacular phase in the life of a particular bird. The adult Wanderer has a wing-span of about ten feet and is the largest of all birds that fly. This pair, photographed on the hills of Gough in early January, are commencing their display. *Left:* Gough Island is one of the only breeding-places of the Tristan da Cunha sub-species of Wandering albatross (*Diomedea exulans dabbenena*). Earthen nest-mounds are built all over the high ground in the centre and west of the island. This young chick, photographed in March a few weeks after hatching, will spend a full eight months at the nest, leaving for the sea the following November.

Right: The Gough Island bunting is one of the two species of bird which are found nowhere else in the world. Early visitors were confused by the great difference in plumage between the young bird shown here and the green-plumaged adult, and described the two stages as different species. Many intermediate forms have now been observed. Below: A series of recordings of the calls of the island's birds was made, using a portable tape-recorder. Here Michael Swales is 'interviewing' a Southern Skua, the chief bird of prey on the island. Nearly all the Gough Island birds are easy to approach, that they have rarely seen a man, and none of the photographs on these pages was taken from a hide

The 12,000 Kerguelen fur seals that breed on Gough are probably over half the total world population of this species. The yellow-crested Rockhopper penguin also abounds on the western beaches

five fruitless winter months on the island in 1919. Debris of these earlier occupations lay thick on the ground, and in digging the hut's foundations we came upon rusted corrugated iron, old timbers, a kettle, a stove and other relics. It took just a week to get the hut up, the weather-station in operation, and the radio equipment running satisfactorily. The first regular weather bulletin from Gough Island was radioed to Cape Town on November 20; and from that date onwards reports were sent out twice every day. The island lies in the path of weather approaching South Africa from the west; and our bulletins, in conjunction with those from Tristan, would, it was hoped, increase the accuracy of forecasting. It was for this reason that the South African Weather Bureau loaned a set of instruments and seconded an experienced observer to the expedition.

Once the Base was running efficiently we were able to start exploring the interior of the island. The very first journeys showed that the earlier charts of the island bore little relation to its terrain, so that our accurate survey filled a real blank on the map. Gough Island is very roughly rectangular, with a length of about eight miles and a breadth of between three and four miles. The coastline is irregular, but it lacks deep bays, and there is no good harbour. Ships seeking a sheltered anchorage have to station themselves wherever the lee happens to be. Most of the island is surrounded by cliffs, varying in height between 100 and 1500 feet, but the highest of these are not vertical and can be scaled in many places without the use of mountaineering techniques. There are numerous off-lying islets and sea-stacks, some of them spectacular in appearance; the largest is 540 feet high.

The centre of the island is an undulating plateau, about 2000 feet above the sea, its surface being largely covered by peat-bogs. The peaks of the island rise in fairly gentle slopes from the central plateau, attaining heights of between 500 and 1000 feet above it. The highest, Edinburgh Peak, reaches about 2986 feet and lies nearly in the centre of the island, while Expedition Peak, a mile further north, is about five feet lower. Mount Rowett, which was ascended by a party from the *Quest* in 1922 and was thought by them to be the summit of the island, in fact only reaches 2744 feet. Along the north and east sides of the island a series of eight deep valleys cut back into the plateau; these are separated by narrow, craggy ridges which are in marked contrast to the uniform, smooth slopes of the central upland. On the west, however, where the rock is different and perhaps more resistant to weathering, the plateau falls away more evenly towards the tops of the sea cliffs and there are no deep glens. The only large area of level lowland lies at the south end of the island, about 200 feet above the sea; and this, like the lower levels of the glens, is covered by thick forest.

The island has a high rainfall, probably exceeding 100 inches a year on the uplands and falling little short of this figure at the Base. The temperatures are fairly high, the climate as a whole is distinctly temperate and there is little about the island to support its classification as sub-Antarctic. Owing to the high rainfall the island has many permanent streams and the upland peat-bogs contain numerous pools. The vegetation is profuse; only the highest and most exposed ridges lack some plant cover. Low down, below the 1000-foot contour, all except the most exposed cliff-slopes support a dense forest of the "island tree" (*Phylica arborea*). This species is confined to the islands of the Tristan group, Gough and New Amsterdam in the Indian Ocean. It attains a height of only about twenty feet but its dense branching and often prostrate habit of growth makes the forest areas difficult to traverse. Growing with the *Phylica*, in clearings and also extending higher up the slopes, there is a tree-fern (*Blechnum capense*). This has a short, stubby trunk up to four feet high and a crown of stiff, yellow-green fronds.

But I would not like this somewhat prosaic and botanical description of the forest to give you the impression that the valleys of Gough Island are lacking in beauty. The opposite is in fact the case. The forest itself is a mosaic of many shades of green and brown; the tree-ferns are a vivid yellow-green, while fresh landslips on the slopes are covered by bright yellow mosses. From the steep sides of the valleys jut rock outcrops of strange form and colour. There are walls and pinnacles, towers and buttresses, of all sizes and at all levels. Some crags are a pale grey, smooth, and devoid of clinging or creeping plants; others are a dark or a sandy brown, with occasional redder patches, and with crusts of multicoloured lichens. Streams come leaping down from the hills, over falls and through deep, overhung pools. As one looks up from the valleys there are glimpses of the peaks around and above; bold rock peaks for the most part, rising sheer from their bases for many hundreds of feet.

Above the forest zone the slopes are covered with a vegetation of tree-ferns, grasses, rushes and crowberry. A kind of wild celery which is confined to Gough Island also grows in this zone. Higher still, the crests of the ridges and the exposed slopes of the peaks are clad in stunted, low-growing grass and mosses. The plateau peat-bogs are covered by mosses (chiefly *Sphagnum*) ranging in their colours from red through golden brown to light green.

The difficulties of walking in the forest made it necessary for us to hack paths in order to gain easy access to the high ground. The upper slopes were easier to walk on, though the shallow peat had a habit of parting from the underlying rock when weight was put upon it, to the detriment of clothing and tempers. The peat-bogs, on the other hand, like those of the English Lakes, were "as safe as some houses, though rather less pleasant": the only thing you could be sure of getting on a mountain walk was wet feet. Because Base lay at sea level, while the greater part of the island could only be reached after a climb out of The Glen, two tented camps were established on the plateau at either end of the island. These camps, the higher of which was just on the 2000-foot contour, were used as bases during the mapping and collecting work on the mountains. Our only visitors during spells in camp were mice. The South African house mouse (*Mus musculus*) was probably introduced by sealers and is now common over the whole island. They soon discovered that tents were richer in food than the world outside and flocked to them. We quickly got used to the sound of exploring feet around us as we lay in our sleeping-bags, but it was harder to put up with those same feet running over our faces and bodies in the middle of the night. Trapping became a necessity; and in one camp, after fifteen had been killed in one evening, life became more bearable.

Mice were also a nuisance at Base Camp, where a more elaborate mouse-trap of the 'bucket and see-saw' type dealt with over three hundred in a fortnight. They are in fact the only truly terrestrial mammals on the island, though two species of seal are common on the beaches. One of these is the fur seal, which has recovered from the attack of sealers and now has a breeding population of upwards of 12,000. The seals are most numerous on the west coast, which is very difficult of access since the boulder-beaches are washed by an almost perpetual swell and the cliffs behind are high and awkward to descend. The other species, the sea-elephant, is the largest of all the world's seals, an adult bull being up to twenty feet long. Although there are only about 300 'elephants' on Gough they were the species with which we came into closest contact, since our hut was built among old wallows and we had to eject a young calf from a pit on the front doorstep before work could begin.

But the birds are the most impressive of the vertebrate animals on Gough. Two species—the rail that George Comer originally discovered and a small bunting—are confined to the island and were studied in detail. Three kinds of albatross, Wandering, Yellow-nosed and Sooty, breed on the island, as do a large number of petrels and shearwaters which nest underground in burrows dug in the hillsides. These ground-nesting birds are incredibly numerous—the population must run into many millions—and wherever you walk your progress is marked by pungent comments in bird-language from beneath your feet. Then there are about 2,000,000 Rockhopper penguins breeding along the coasts. These differ from the familiar Adélie penguins in that they have long, yellow tassels of feathers on their heads, which flap wildly and comically as the birds bob along.

During the period between our landing in November 1955, and our relief by the South African frigate *Transvaal* on May 13, 1956,

The sea-elephant is the largest of the world's seals, a grown bull weighing up to four tons. Here, moulting on the black sands of the east coast of Gough, young bulls roar defiance at intruders

R. W. Le Maitre

Gough Island Scientific Survey

Birds living on remote storm-swept islands run the risk of being blown out to sea. The Gough Island rail avoids this danger since it cannot fly. Like the bunting it is peculiar to the island

we covered most of the ground we had set out to explore. What conclusions, you may ask, did we reach? What did we find out that was new, especially in relation to the topics of animal and plant distribution and evolution upon which I laid stress earlier in this article?

One cannot answer such questions in full until the series of specimens of plants, animals and rocks that we brought back have been fully studied. But the fauna and flora of Gough Island proved to be very poor in species; poor that is by comparison with, say, a part of an English county of similar area, climate and topography. This poverty is certainly due to the remoteness of the island and to the difficulty experienced by animals and plants in getting there. But among the plants there are several species with hooked seeds and on several occasions we found these seeds attached to bird-feathers; while there is a great preponderance of the so-called "lower plants" whose dispersal is by means of light spores which can easily be carried by the wind. Although the number of species peculiar to the island, the result of evolution in isolation there, cannot be assessed until the collections have been studied in detail, there is no doubt that a number of these species occur. From our first observations it is clear that Gough Island is, as we had hoped it would be, a rewarding place for the study of distribution and evolution.

R. N. Rudmose Brown, who visited Gough Island with the *Scotia* in 1904, commented that "looked at from an impartial standpoint, Gough Island is but a relatively insignificant rock in mid-ocean, but its very isolation makes it of great interest. It may throw light on some former continuity of land in the Southern Hemisphere, and it cannot fail to elucidate various problems of biological distribution when its flora and fauna have been thoroughly investigated. It is for these reasons that its further exploration is so much to be desired."

He was, I think, quite right.

Explorers' Ships—II

by G. P. B. NAISH and R. A. SKELTON

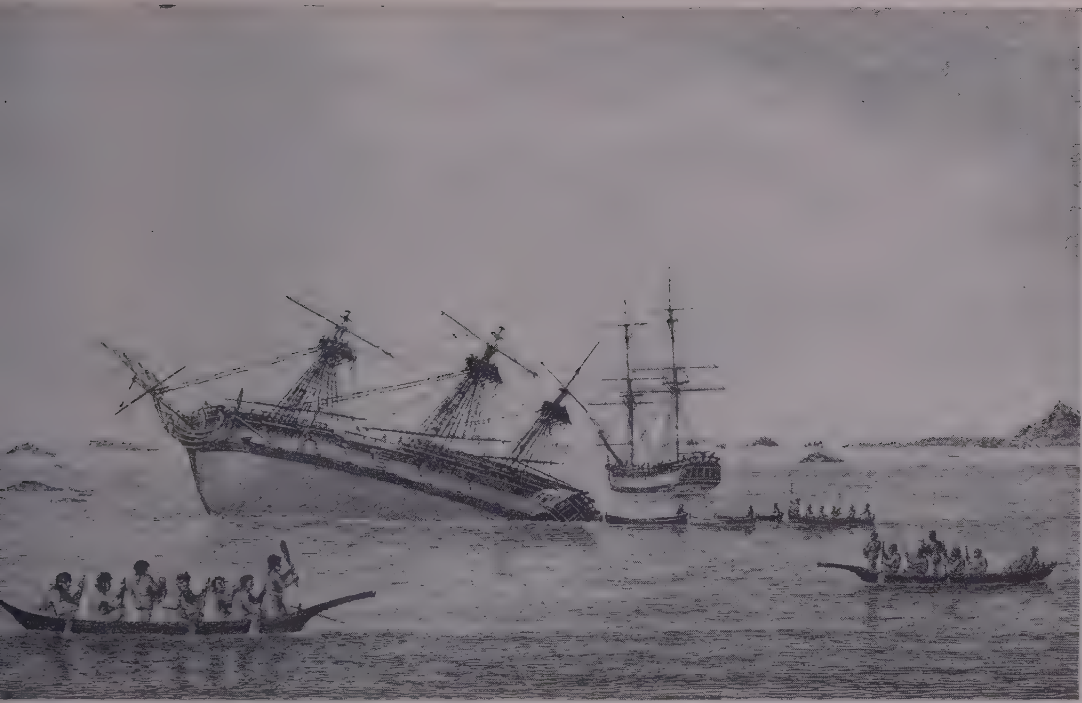
The subject of this and of a preceding article, published in our December number, requires to be treated simultaneously from two aspects: that of the ships themselves and that of the voyages of exploration made in them. We are therefore fortunate in having obtained the collaboration of two authors who are experts in these fields: Mr Naish as Curator of Models at the National Maritime Museum, Greenwich, and Mr Skelton as Superintendent of the Map Room at the British Museum, whose recently concluded series of articles on Explorers' Maps aroused great interest among our readers

FROM Cook's time, exploration by sea has implied not only discovery but also survey and charting. Using handier instruments—the reflecting sextant, the chronometer, the station pointer—the navigator could plot his landfalls precisely enough to enable them to be re-identified from his chart. The types of ship employed on these duties in the last century of sail were foreshadowed by Cook's practice and experience. The marine surveyor operating within easy reach of his base preferred a relatively small vessel, often built in local yards; and Cook's survey of Newfoundland in 1763-7 was made in a 60-ton schooner altered into a brig because that rig proved handier. The charting of remote coasts called for a robust ship suitable both for long ocean voyages and for close inshore navigation, roomy but of shallow draught; and Cook made his three Pacific voyages in north-country colliers of 300 or 400 tons. Ships of this size came to be generally chosen for exploration or survey; and Cook's experience pointed to the need for a consort even though Dalrymple had argued that "a thousand motives recommend a single ship for discovery". Whatever the size of ship employed, the survey within soundings had to be made by boatwork.

The French expeditions to the Pacific in the last quarter of the 18th century, like those of Byron and Wallis, were equipped with frigates; but the example of Cook's voyages seems to have determined the choice of ships for the English naval surveys which completed his work on the Pacific coasts of North America and along the Australian coasts. From 1792 to 1794 Captain George Vancouver, who had sailed with Cook on his last two voyages, completed "perhaps the most arduous survey that it had fallen to any navigator to undertake", that of the intricate north-west coast of America from 39° N to Cook Sound in 61° N. His ships were the "sloop of war" *Discovery*, of 340 tons, and the "armed tender" *Chatham*, a brig of 135 tons (Fig. 1). The channels and deep inlets of the coast were surveyed in the boats, and the virtue of a second and smaller ship was apparent at the Columbia River, where in October 1792 the *Chatham* got across the bar but the *Discovery* was unable to follow her.

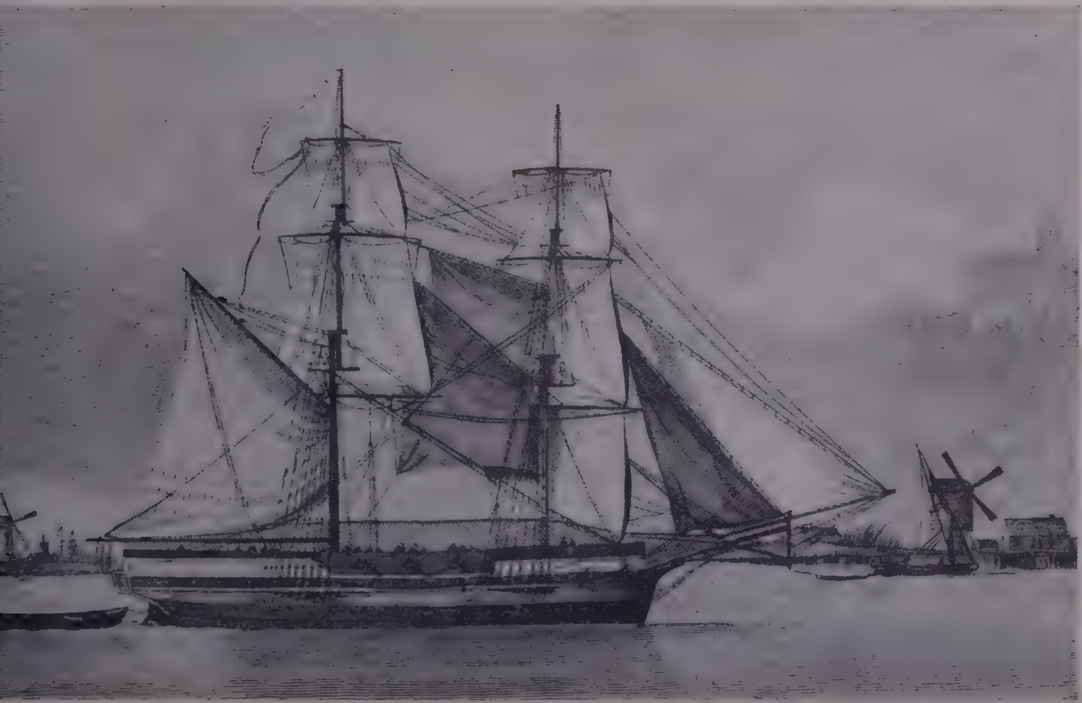
The convict settlement founded at Sydney in New South Wales became the base for some notable naval surveying in boats and small ships. In December 1797–February 1798 George Bass, a surgeon of H.M.S. *Reliance*, made a voyage in a 28-foot whale-boat along 600 miles of the south-east coast, discovering the strait between Tasmania and the mainland; and in October 1798–January 1799 Matthew Flinders, in the 25-ton sloop *Norfolk* built at Norfolk Island, sailed through the strait and circumnavigated Tasmania. In January 1800 the "armed surveying vessel" *Lady Nelson*, Lieutenant James Grant, sailed from England with orders to examine the undiscovered section of the south coast of Australia. The *Lady Nelson* (Fig. 2) was a 60-ton brig, that is, a two-masted vessel square-rigged on both masts, built at Deptford in 1799. She had a sliding keel, with three centre-boards, designed by Captain John Schanck, and with her keel raised she drew only six feet of water. Although known to her crew as "his Majesty's *Tinder-box*", and having the "defect of the utter impossibility of her ever being able to beat off a lee-shore", she was declared by Grant to be "equal to any vessel as a sea-boat". The *Lady Nelson* made the first passage of Bass Strait from west to east and reached Sydney in January 1801. After further surveys she became a storeship and was eventually, in 1825, taken by natives off Timor.

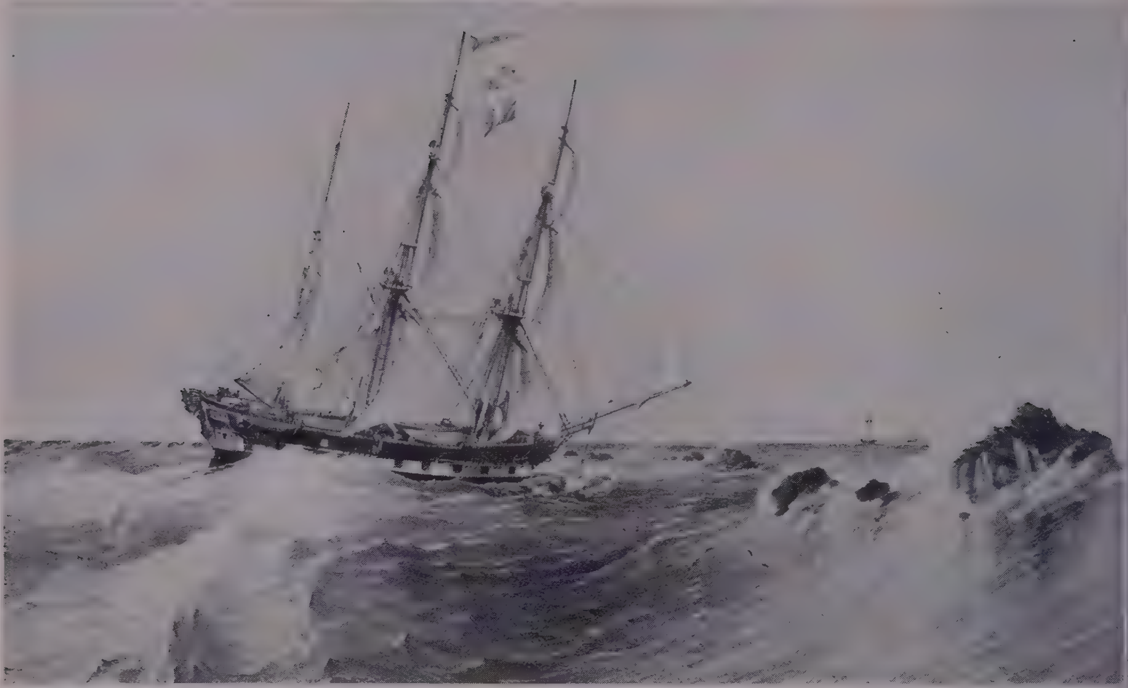
The great survey of the Australian coasts by Flinders in 1802-3 was made in "a north-country-built ship", the *Investigator* of 334 tons, which "in form, nearly resembled the description of vessel recommended by Captain Cook as best calculated for voyages of discovery". In her Flinders, like Cook,



All illustrations, except four, from the British Museum

(*Fig. 1 :* above) *Vancouver's* Discovery *heeled over on the rocks in Queen Charlotte's Sound, north of Vancouver Island, 1792. Topmasts were struck and the ship lightened to refloat her. Beyond is the* Chatham. (*Fig. 2 :* below) *The* Lady Nelson *in the Thames before her voyage to Australia, 1800*





Michael Huxley

(*Fig. 3:* above) *The* Rattlesnake *passing through a gap in a coral reef off the Louisiade Archipelago in 1849. The biologist T. H. Huxley was assistant surgeon. Her tender, the* Bramble, *is seen inshore.* (*Fig. 4:* below) *The* Challenger, *in 64°S, making a sternboard after collision with a berg, 1874*

threaded his way through the Barrier Reef, conning his ship "from the mast-head"; but although "newly coppered and repaired" the *Investigator* was rotten, and on her return to Sydney she was found "incapable of further service". Flinders's work was continued by Captain Phillip Parker King, who, in the course of his "survey of the intertropical and western coasts of Australia" between 1817 and 1822, three times circumnavigated the continent in the little cutter *Mermaid* of 84 tons. The *Mermaid*, which was to replace the *Lady Nelson* as the surveying vessel of the young colony, was built of teak in India; she "did not, when deep-laden, draw more than 9 feet". King's later surveys were made in the brig *Bathurst*.

From about 1811 the surveying service of the Royal Navy was brought under the control of the Hydrographical Office, and in 1814 two small surveying or "sounding" vessels, the *Investigator* and the *Sydney*, were first entered in the Navy List.

The surveying voyages made by two small naval ships, fruitful as they were in hydrographic work, also inaugurated the scientific career of famous biologists. In 1831–36 Charles Darwin sailed in the *Beagle*, a man-of-war brig, refitted with a mizzen-mast, which was employed for sixteen years on the South American, African and Australian coasts. Between 1846 and 1850 the *Rattlesnake*, in which T. H. Huxley served as assistant surgeon and naturalist, was charting along the east coast of Australia, in the Louisiade Archipelago, and on the Papua coast. Neither of these vessels was well adapted to her task. The *Rattlesnake* (Fig. 3) was one of the old "donkey frigates" of 28 guns, described by one captain as a "miserable and useless class". On his return Huxley sardonically observed that the Admiralty "invariably" selected as exploring vessels "the slowest, clumsiest, and in every respect the most inconvenient ships which wear the pennant. In accordance with the rule, such was the *Rattlesnake*."

The research ship *Challenger* (Fig. 4) was quite different, a corvette of over 2000 tons, fully rigged and with engines of 1260 h.p. which could give her 8 knots speed. Commanded by Captain George Nares, and fitted as a floating laboratory, she was sailed round the world in 1872 so that a scientific examina-

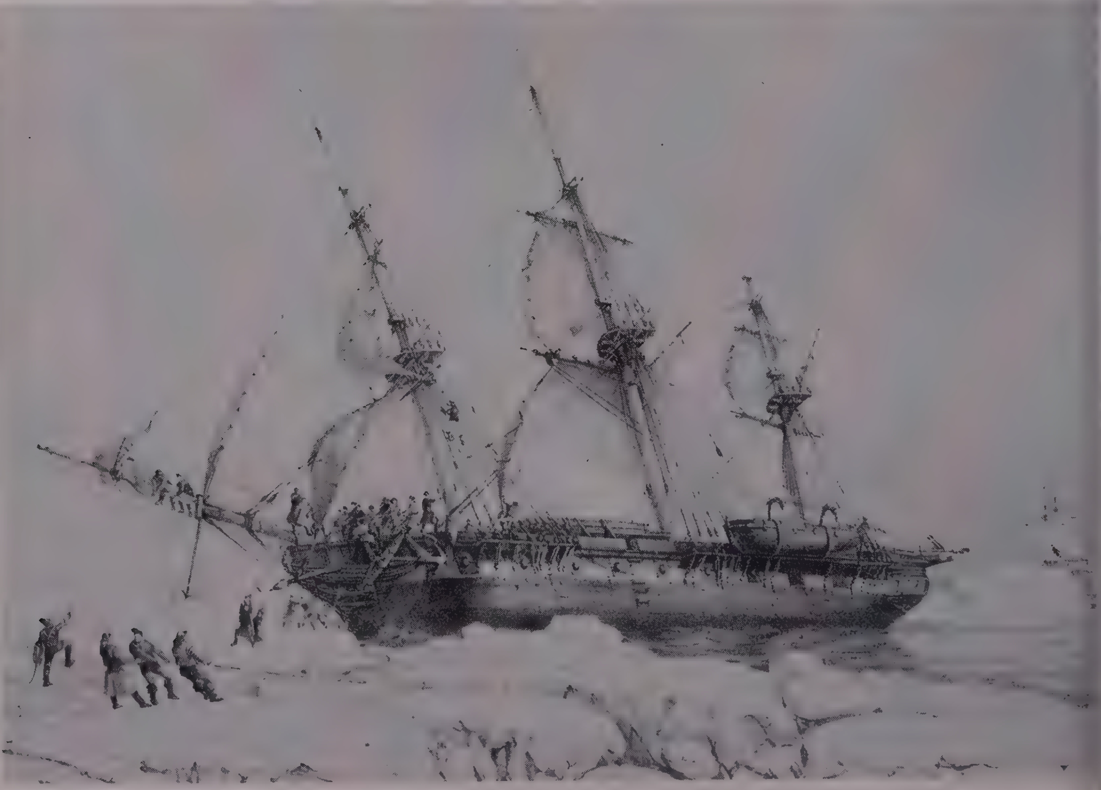
(Fig. 5) The brig Jane, *Captain James Weddell, and cutter* Beaufoy, *Matthew Brisbane master, in 68°S, passing through "a chain of ice islands", 1823: from a sketch by Weddell. His little vessels are typical of those in which sealers and whalers navigated to high latitudes in the Antarctic*

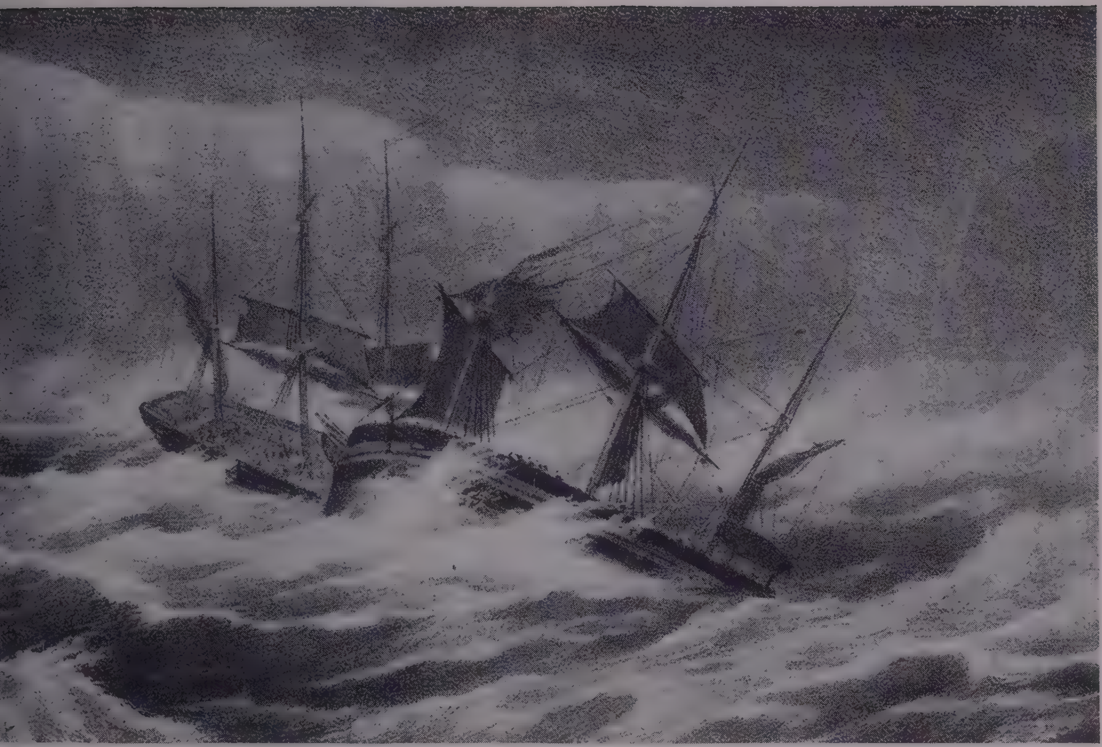
tion could be made of the ocean beds. Deep sounding and dredging led to the collection of material which is still being studied and evaluated.

In exploration by sea the main effort of the 19th century was concentrated on the polar regions. The whaling and sealing ships sent out by American and English companies made many chance discoveries in the South Pacific and Antarctic, often incorrectly or imperfectly charted. The whalers were ship- or barque-rigged, and the sealers were quite small brigs, schooners or even cutters, handy craft for manoeuvring amongst the icebergs of the Antarctic or along the edges of the pack. Among those whose names occur in the annals of exploration are the brig *Williams* of Blyth (William Smith, master), which discovered the South Shetlands and first sighted the Antarctic continent; the 40-ton cutter *Hero* of Stonington, Connecticut (Nathaniel Palmer, master), to which the discovery of the continent has also been ascribed; the sloop *Dove* (Captain George Powell) which discovered the South Orkneys; the 60-ton brig *Jane* of Leith and 65-ton cutter *Beaufoy* of London, with which James Weddell in February 1823 reached a latitude of 74° S (Fig. 5); and the brig *Tula* and cutter *Lively* which in 1830–31 under the command of John Biscoe circumnavigated the Antarctic continent in high latitudes. The cutters which made these longer voyages were normally manned by about a dozen men; the single mast carried a gaff-mainsail and topsail, jib and staysail, and a yard for setting a square sail on a following wind. An Antarctic voyage in such small craft was 'no picnic', and several of them were lost on this service.

Of the three naval expeditions which between 1837 and 1843 explored the Antarctic under the French, United States and British flags, the American squadron of five ships, under Captain Charles Wilkes, was the largest but the least well-found. Three were warships, whose large square gun-ports made it impossible to keep them dry between decks. They were not fortified against ice, and one ship, the 650-ton *Peacock*, had been

(Fig. 6) The naval corvette Astrolabe, *on Dumont d'Urville's Antarctic expedition, forcing a way through ice-floes under courses and topsails, 1838, with her consort the* Zélée *in the distance*



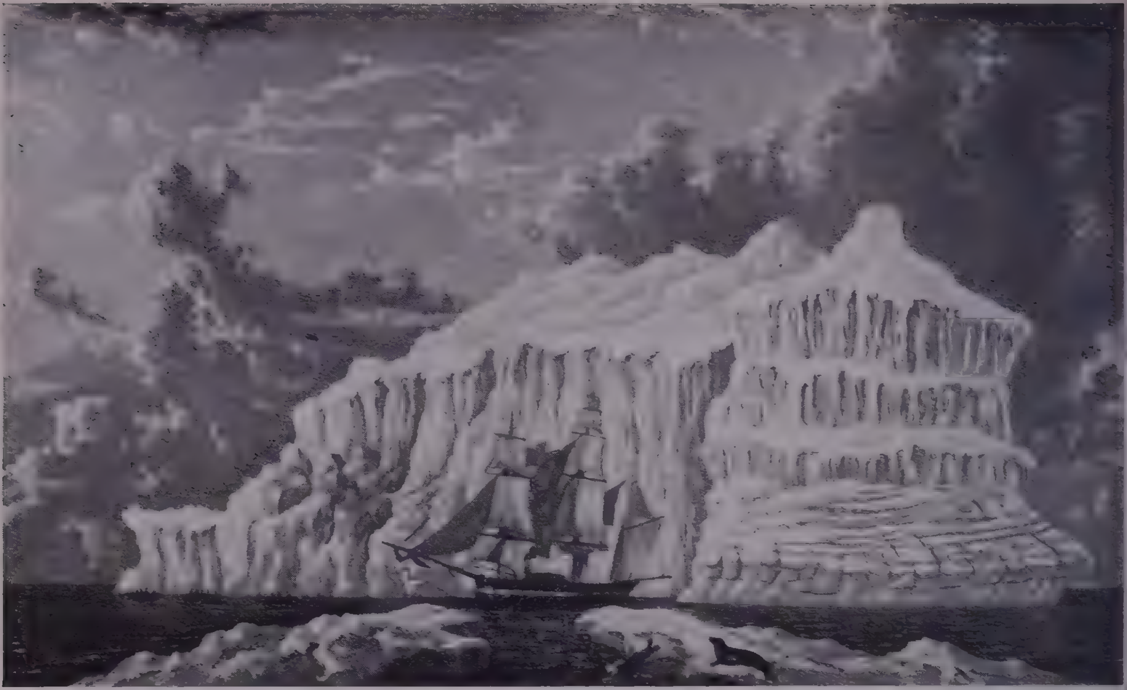


(Fig. 7) The Erebus *and* Terror *in collision on the weather side of two icebergs, March 12, 1842. Although "entangled by their rigging" and drifting on the bergs, they were skilfully disengaged*

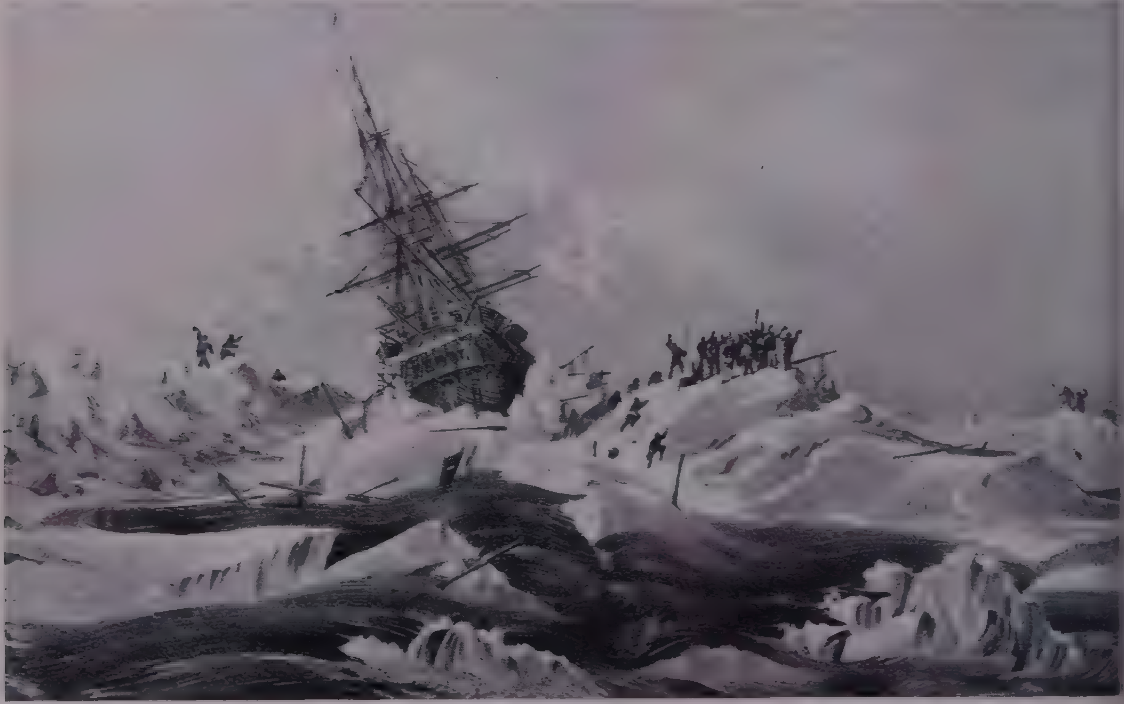
(as her commander reported) "fitted out . . . with less regard to safety and convenience than any vessel I ever had anything to do with". The capacity of the ships allowed for stowage of provisions for no more than 12 months and of fuel for seven. Only two of Wilkes's ships completed the voyage. The French expedition under Captain J. S. C. Dumont d'Urville also sailed in men-of-war which little effort had been made to convert for Antarctic navigation, the corvettes *Astrolabe* and *Zélée* (Fig. 6).

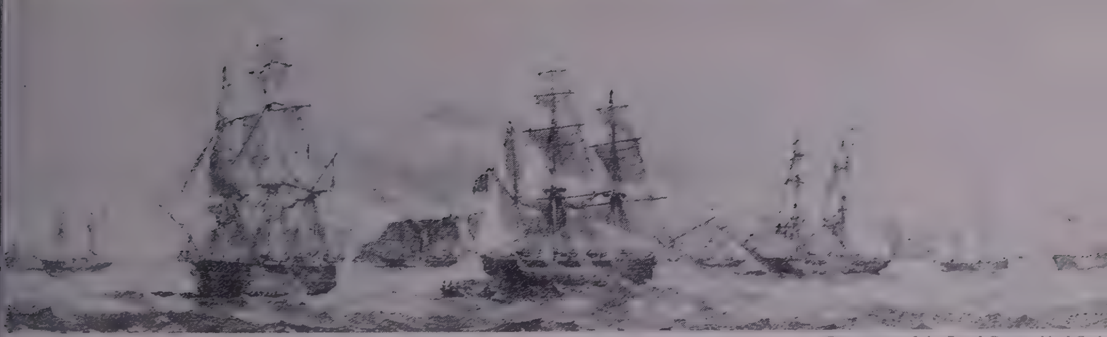
Captain James Clark Ross, who commanded the British expedition, had long experience of Arctic voyages, and his ships were of a type whose qualities for ice navigation had been proved in the north. The *Erebus* of 370 tons, and *Terror*, of 340 tons, were bombs, "of strong build and with a capacious hold", three-masted, barque-rigged, without engines. The *Terror* had already been strengthened for ice work before her Arctic voyage of 1836–7, and the *Erebus* was now similarly reinforced. The sides and bottom were doubled and coppered, and all external projections were removed; strong internal watertight bulkheads were added, the bow and stern were built up almost solid, and the holds were "so stowed as to form a solid mass throughout". So fitted these ships were able to weather a gale in the pack-ice, in which "there seemed to be but little probability of our ships holding together . . . so frequent and violent were the shocks they sustained"; although the *Terror* lost her rudder, Ross found that "after so many hours of constant and violent thumping, both the vessels were nearly as tight as they were before the gale". The navigation of the ships among icebergs and through the pack was skilful, and brought them safely out of a collision with each other to the windward of a chain of bergs (Fig. 7).

In the Arctic (as in the Antarctic) high latitudes were attained by Greenland whalers taking advantage of open seasons in which the sea to the north was clear of ice. In 1806, for instance, Captain William Scoresby of Whitby reached a furthest north of 81° 30′ to the east of Spitsbergen. The first of the Arctic expeditions promoted by the Admiralty during the first half of the 19th century was



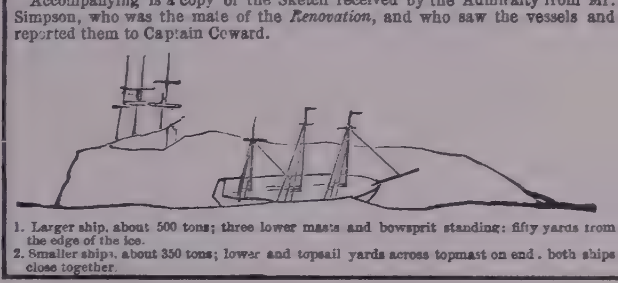
(*Fig. 8:* above) *The* Hecla, *Lieutenant W. E. Parry, passing an iceberg in Baffin Bay, July 1819, with all sail set: from a sketch by Lieutenant F. W. Beechey.* (*Fig. 9:* below) *The temporary "disruption of the ice" round the* Terror, *frozen up at the entrance of Hudson Bay, February 20, 1837. The force with which she was nipped, wrote Back, "would have crushed a less strengthened vessel to atoms"*





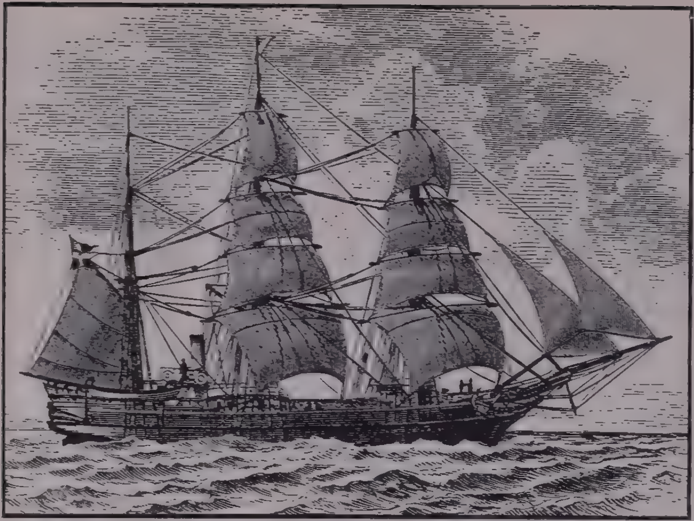
B, courtesy of the Royal Geographical Socie

ig. 10 : above) *The* Resolute, Assist-
nce and other ships engaged in the search for
ranklin's expedition lying off Cape Dudley
igges, in the north of Baffin Bay, August
350 : from a drawing in Illustrated Arctic
ews, a magazine prepared on board H.M.S.
esolute. (*Fig. 11 :* right) *The ships seen*
the ice in April 1851 from the Renova-
on brig and conjectured to be Franklin's.
Fig. 12 : below) *H.M.S.* Enterprise *enter-*
g Dolphin and Union Strait, September 1852



Accompanying is a copy of the Sketch received by the Admiralty from Mr. Simpson, who was the mate of the *Renovation*, and who saw the vessels and reported them to Captain Coward.

1. Larger ship, about 500 tons; three lower masts and bowsprit standing: fifty yards from the edge of the ice.
2. Smaller ships, about 350 tons; lower and topsail yards across topmast on end. both ships close together.



(Fig. 13) A. E. Nordenskiöld, in the 300-ton whaling-ship Vega, *made the first circumnavigation of Europe and Asia, 1878-1880, completing the north-east passage under sail and steam*

led by Captain John Ross in a Hull whaler, the *Isabella;* but most of these expeditions sailed in naval vessels selected and adapted for their task. Bomb vessels, which had been employed in Captain C. J. Phipps's polar voyage of 1773, were specially suitable, being "of large scantling, and having a capacious hold". Thus, on his voyage for a north-west passage in 1819–20, Lieutenant W. E. Parry had the Hull-built bomb *Hecla* (Fig. 8), of 375 tons, and the *Griper*, a gun-brig of 180 tons whose deck was raised by six feet to increase her stowage. The bow and bottom of the ships were reinforced and doubled, and the keel was strengthened. "The mode of rigging the vessels" (wrote Parry) "was that of a barque, as being the most convenient among the ice, and requiring the smallest number of men to work them"; the square mizzen-topsail of the *Hecla* was replaced by a gaff-topsail and driver, and this rig enabled the crew to be set at three (instead of two) watches. The ships were provisioned, as was customary, for two years. The *Hecla* made three later voyages to the Arctic under Parry's command.

The bomb *Terror* had her first polar service under the command of Captain George Back in 1836–7. Caught in the pack-ice at the entrance of the Fox Channel, to the west of Baffin Island (Fig. 9), and stranded for 118 days on a great floe, on which she drifted for 200 miles, she took a severe battering from which she emerged "crazy, broken, and leaky"; and only her robust construction enabled her to limp home with chain cables passed under her keel to frap her together until she was beached on the Irish coast to prevent her from sinking.

The *Terror* was repaired in time to be commissioned, with the *Erebus*, for Captain J. C. Ross's Antarctic voyage of 1839–43. Two years after their return the two bombs were selected for the expedition of Sir John Franklin for the north-west passage. For this duty the ships were fitted with auxiliary steam engines, of 20 horsepower, converted from railway locomotives; earlier, in 1829, Sir John Ross's *Victory* had been fitted with a steam engine which constantly broke down. They sailed in May 1845 and were last sighted by an English whaler off the Greenland coast in July of that year. The only surviving written record of the last days of the expedition, found in the north of King William Island and dated April 25, 1848, reported that "H.M. ships Terror and Erebus were deserted on the 22nd April, 5 leagues NNW of this, having been beset since 12th Sept. 1846 . . ." The two ships are believed to have drifted through Victoria Strait to the south-west of King William Island before foundering; but it is conceivable that their end was different. In April 1851, off the east coast of Newfoundland, an English brig bound for Quebec sighted a large ice-floe on which were stranded two three-masted ships (Fig. 11). These corresponded in appearance with the *Erebus* and *Terror;* and it is a possibility not to be excluded that they suffered a similar experience to that of the *Terror* under Back in 1836–7 and drifted out into Baffin Bay and south through Davis Strait into the Atlantic.

The search for Franklin brought a remarkable concourse of shipping into the Arctic; in the autumn of 1850 no fewer than fifteen vessels, of widely different types, were engaged in it (Fig. 10). From the Pacific it was conducted by the *Enterprise* (471 tons), Captain R. Collinson, and the *Investigator* (420 tons), Captain R. J. McClure (Fig. 12). Both made notable voyages: the *Investigator* was abandoned off Banks Island, but Collinson brought his ship home after over three years in the Arctic. From Baffin Strait, a naval squadron comprising the ships *Resolute* and *Assistance* with two steam tenders pursued the search in 1850 and 1852. This was "practically the first occasion on which full-powered steamers were employed in ice navigation"; and it was the *Fox* under Captain L. McClintock which at length in 1857–8 obtained evidence of the fate of Franklin and his crews.

The *Fox* was a steam yacht of 177 tons built of wood for a member of the Royal Yacht Squadron in 1855. She was bought by Lady Franklin in 1857 and made a most remarkable voyage in the ice for a vessel built as a yacht. The steering-wheel, binnacle and bell of the *Fox* are exhibited at the National Maritime Museum with the relics of the Franklin expedition brought home by McClintock.

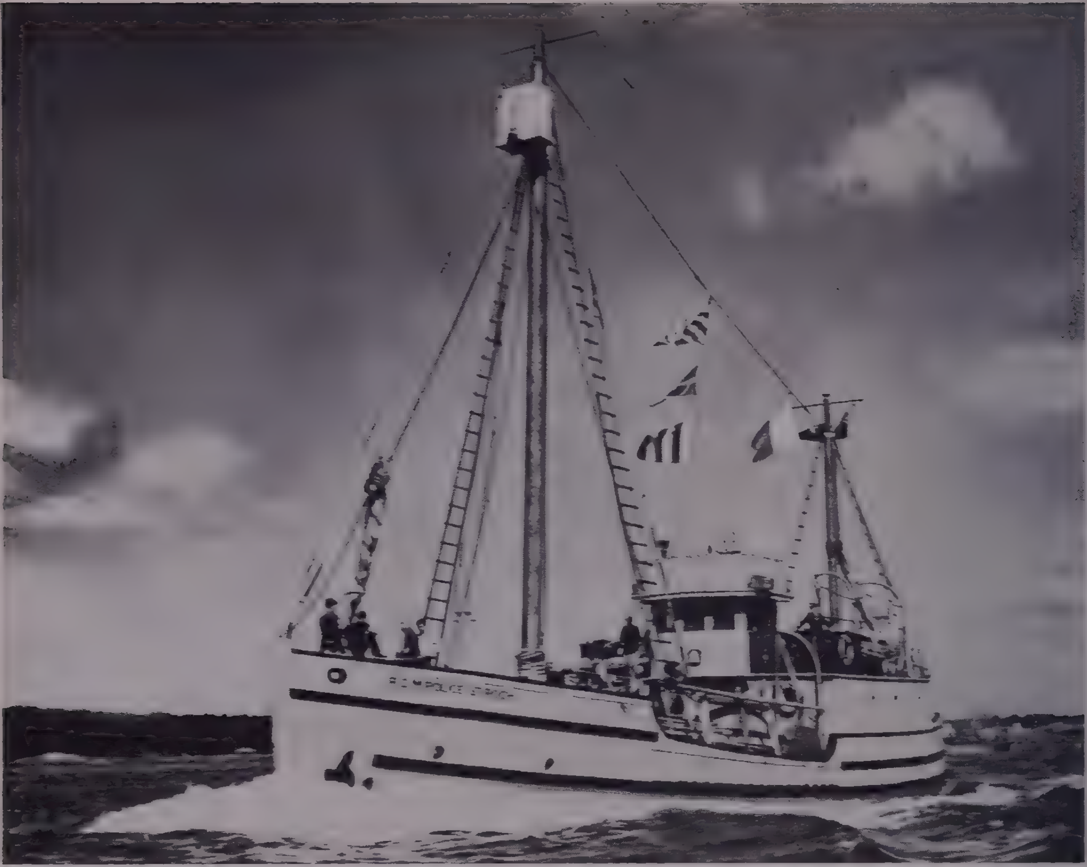
The navigation of the northern passages between the Atlantic and the Pacific was accomplished by vessels of diverse and individual character. A. E. Nordenskiöld's ship the *Vega*, which completed the north-east passage in 1878–9, was a whaler of 300 tons, built at Bremen, with an ice-skin, barque-rigged, and with a 60 h.p. steam engine (Fig. 13). This ship spent 294 days frozen in the pack-ice. The sea-route by the north of Siberia was first traversed in a single season by the Soviet ice-breaker *Sibirikov* in 1932.

In October 1892 the most remarkable vessel ever designed and built for polar navigation was launched in Christiania Fjord (Fig. 14). This was the *Fram*, in which Fridtjof Nansen had conceived the plan of drifting in the ice across the Pole from the mouth of the Lena River to Greenland. The ship was to be "as small and strong as possible", so as to "withstand the pressure of the ice" and to carry five years' stores for twelve men.

She was constructed with sloping sides to the end that "instead of nipping the ship, the ice must raise it out of the water". A fore-and-aft schooner of 530 tons, she was very broad in beam, had a hull of oak 30 inches thick, strengthened with iron stanchions, and drew 15 feet when laden. She was fitted with an auxiliary steam-engine of 220 h.p. Nansen's project was generally condemned as "ignoring the accepted canons of ice-navigation, of avoiding besetment, and of following the protected lee of land-masses"; yet the *Fram* proved all these criticisms to be unfounded. In Sep-

(Fig. 14) The Fram *in the ice, 1895. Designed by Nansen and built by Colin Archer, she was a three-masted fore-and-aft schooner and carried thirteen men. The windmill generated electricity*

From Farthest North *by Dr Fridtjof Nansen (Constable & Co., 18*



By courtesy of the Royal Geographical Society

Fig. 15. The St Roch, *commanded by Sergeant H. A. Larsen, completed the north-west passage in both directions (1940–42 and 1944), following channels found by Collinson, McClure and Amundsen*

tember 1893 she was frozen up near the New Siberian Islands, and after reaching the latitude of 85° 57′ she drifted west and south until she freed herself north of Spitsbergen in June 1896.

The *Fram* made a second voyage to the Arctic under Otto Sverdrup; and she was lent to Roald Amundsen for the voyage to the Ross Sea, from which in 1911 he made his journey to the South Pole.

The first ship to navigate the north-west passage throughout (1903–6) was the little herring-boat *Gjöa* of 47 tons, commanded by Amundsen. She drew 7½ feet of water; she was cutter-rigged and had an auxiliary petrol-engine of 13 h.p.; and her crew numbered seven. Amundsen's selection of so small a vessel enabled him to take the "inner route" close to the mainland, without fear of shallow water; and he reached Bering Strait in August 1906 after three winters in the ice.

Another small ship, the *St Roch*, an 80-ton diesel-engined patrol boat of the Royal Canadian Mounted Police, was the first to make the north-west passage in both directions, and the first to traverse it in a single season (Fig. 15). Her west-east voyage, using the "inner route", was made in 1940–42; and in July–October 1944 she sailed by Baffin Bay, Lancaster and Melville Sounds, and Prince of Wales Strait into the Pacific—the voyage of 7295 miles from Halifax to Vancouver being made in eighty-six days.

The vessels described in these two articles illustrate some of the stages by which maritime peoples have groped towards the development of a 'proper ship' for discovery. They were the forerunners of the highly specialized ships which the technological skills of the 20th century have designed for intensive scientific research and hydrographic survey. It is fitting that one of them should this year have been renamed *Endeavour*.

Rhodes, the Romantic Island

by JAN JUTA

THOUGH the "isles of Greece" conjure a certain magic by their name they appear arid and stark to the airborne traveller of today as they lie, gleaming amber and golden, against the clear sapphire of the Aegean Sea. Rhodes, however, belies this first impression for it rises from the foam-edged sea, green and fragrant, into the cool ravines of mountains which form a backbone along the whole length of the island.

In the 5th century B.C. Pindar wrote an ode which was inscribed in gold letters and enshrined in the Temple of Athene at Lindos, one of the earliest settlements on Rhodes. In it he thus describes the island:

> From the wonders of the sea arose an island which is held by the Father of the piercing beams of light, the ruler of the steeds whose breath is life.

Nation after nation has come to and gone from the island, but the Rhodians have remained steadfastly Greek to this day, claiming direct descent from Apollo and a daughter of Aphrodite as their parents, and Zeus, the Father of All, as their special guardian. From the time of her mythological birth Rhodes has maintained an individuality unbroken through the centuries by wars, earthquakes, or religious and political changes. Though inhabited as long ago as 4000 B.C. it was only in about 1500 B.C. that she became known as a centre of cultural importance, with her arts and sciences true to her Greek ancestry, an integral part of the whole Mycenaean development, retaining nevertheless just that individual quality which is the prerogative of all islands.

Of the three ancient cities which were in existence long before the city of Rhodes was built and which were named after the sons of Apollo, Ialysos, Cameirus and Lindos, only the last remains alive and active. Lindos still stands triumphant, with the columns of Athene's temple stark against the seascape, a perfect pedestal for the gold and ivory goddess. It is no wonder that Egypt and Macedonia sent her gifts, and that kings were humbled at her high altar. While Cameirus, a ruin of pink and golden stone, dreams of her past, listening for an echo of her greatness in the breeze that stirs her pines, Lindos still shelters the few sons of her ancient race clustered around the base of her acropolis. Now they are humble fishermen, but their ancestors sailed the seas as far as Sicily and Spain, and sheltered on the hidden beaches of Sardinia.

The village, neat and whitewashed on the slopes above the sheltered bay, tells a symbolic story in itself. For on the high acropolis Athene's temple gazes out to sea with blinded eyes hard by the remains of a mediaeval fortress; while among the cobbled streets where villa gardens once sheltered sacred statues nestles a tiny Byzantine church, a glowing jewel of gold and precious colours, in which flickering lamps illumine frescoes and mosaics, and sad-faced ikons now replace the smiling deities of pagan shrines. Few modern influences have affected Lindos. On the vine-covered patio of the inn we were served with the little fresh fish from the bay, washed down by the rather heady local wine. No foreign imports or fancy cooking here; even the bread was different in taste, made in thin wafers with the strong flavour of the grain; all belonging to the whole age-old scene.

The Lindian fishermen drinking at the next table were also the true product of their calling. Salty, wrinkled and gnarled by the sea-spray yet somehow purified by exposure, their bright eyes and handsome brows bespoke breeding and intelligence far beyond their status. They might indeed have been the men whose fleets had been in contact with Egypt, Phoenicia and the predatory Macedonians, the very men who had made the Lindian ships famous throughout the world.

Only when Rhodes the capital was built beside the lovely natural harbour in 408 B.C. did Lindos yield her supremacy. So the Rhodes we know today is indeed one of the oldest towns in the world, 2365 years old, and still peopled by the direct descendants of the original inhabitants.

Inevitably mention of the harbour, bright with hibiscus and oleander, brings to mind the Colossus, one of the seven wonders of the ancient world. We are told that when Alexander the Great died, Antigonus became King of Macedonia and, greedy of the wealth of Egypt, attacked Ptolemy. The Rhodians, whose ships had carried Alexandrian grain to all the known world, sided with Egypt and thereby brought the fury of Macedonia upon their own heads. For, failing to conquer Egypt, Antigonus sent his son Demetrius to wreak vengeance on the island, and the Macedonians anchored 270 ships off shore preparatory to a long, determined siege. But the Rhodians never gave in. So Demetrius, tired of such dogged resistance, retreated, leaving behind him as a 'legacy' all his armour and equipment, together with his giant helepole, or besieging engine, with which he had hoped to batter down the walls of the city. It was from the metal of this unexpected windfall that the Colossus was built, for the Rhodians wished to commemorate their victory and, summoning Chares, a Lindian sculptor of some fame, they commissioned a statue to Apollo or Helios, the Sun-God.

For twelve long years Chares worked, casting his immense bronze, section by section, until in 280 B.C. the statue was ready to set in place. Just where it stood is no longer known, nor has its pose been reliably described; it appears to be only a mediaeval tradition that the giant figure straddled the harbour, allowing the ships to pass between the huge legs. All we know is that the figure was about 100 feet high, and made of bronze, which according to one writer weighed 360 tons.

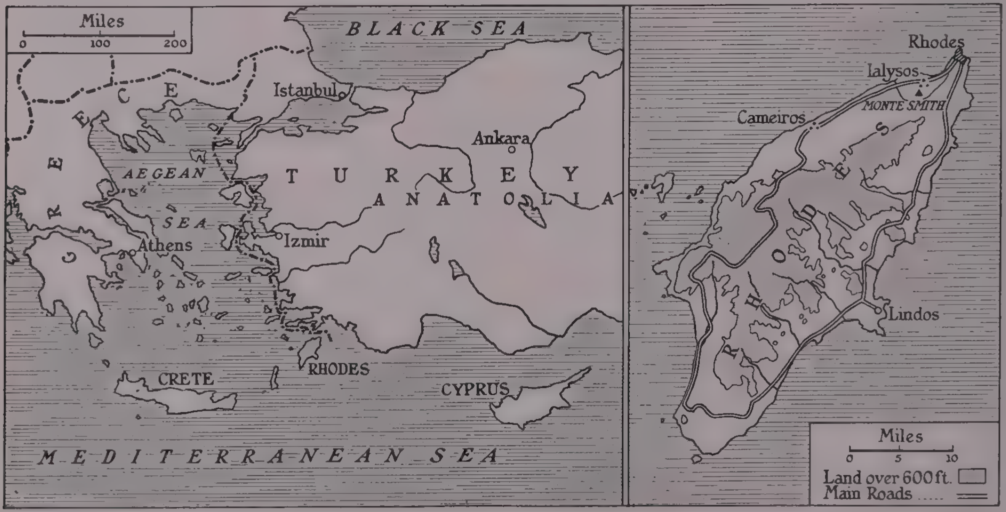
Less than sixty years later the Colossus was shaken down by an earthquake which destroyed much of the city; and though it was proposed to reinstate it this was forbidden by the Oracle at Delphi when consulted by opposing factions of the islanders.

Writing three hundred years after the earthquake, Pliny enthusiastically tells us:

> Most worthy of admiration is the colossal statue to the Sun at Rhodes made by Chares the Lindian. Fifty-six years after it was erected it was thrown down by an earthquake, but even as it lies it excites our wonder. Few men can clasp the thumb in their arms, and the fingers are larger than most statues . . . within, too, are seen large masses of rock by the aid of which the artist steadied it while erecting it.

As we follow the history of the island we find that Cassius, the Roman general, anxious to expand the Imperial control of the Mediterranean, attacked and pillaged her in 43 B.C., and the following year burned the ships of the Rhodian fleet. These were the ships which had been used to police the seas, the famous "Rhodian Sea Laws" having developed from the activities of the Rhodian fleet against piracy. They were to be published by Justinian in A.D. 533, two thousand years after they were devised.

Through it all the Colossus lay broken and undisturbed for nine centuries, watching history change the face of the world. The power of the island declined as she was plundered by enemies and laid waste by earthquakes. In A.D. 155 another earthquake again destroyed the city, shattering the thousands of statues that had adorned its parks. Then finally came the Saracens to end the life-story of the Colossus. In 653 they took possession of the city, and sold the statue as junk



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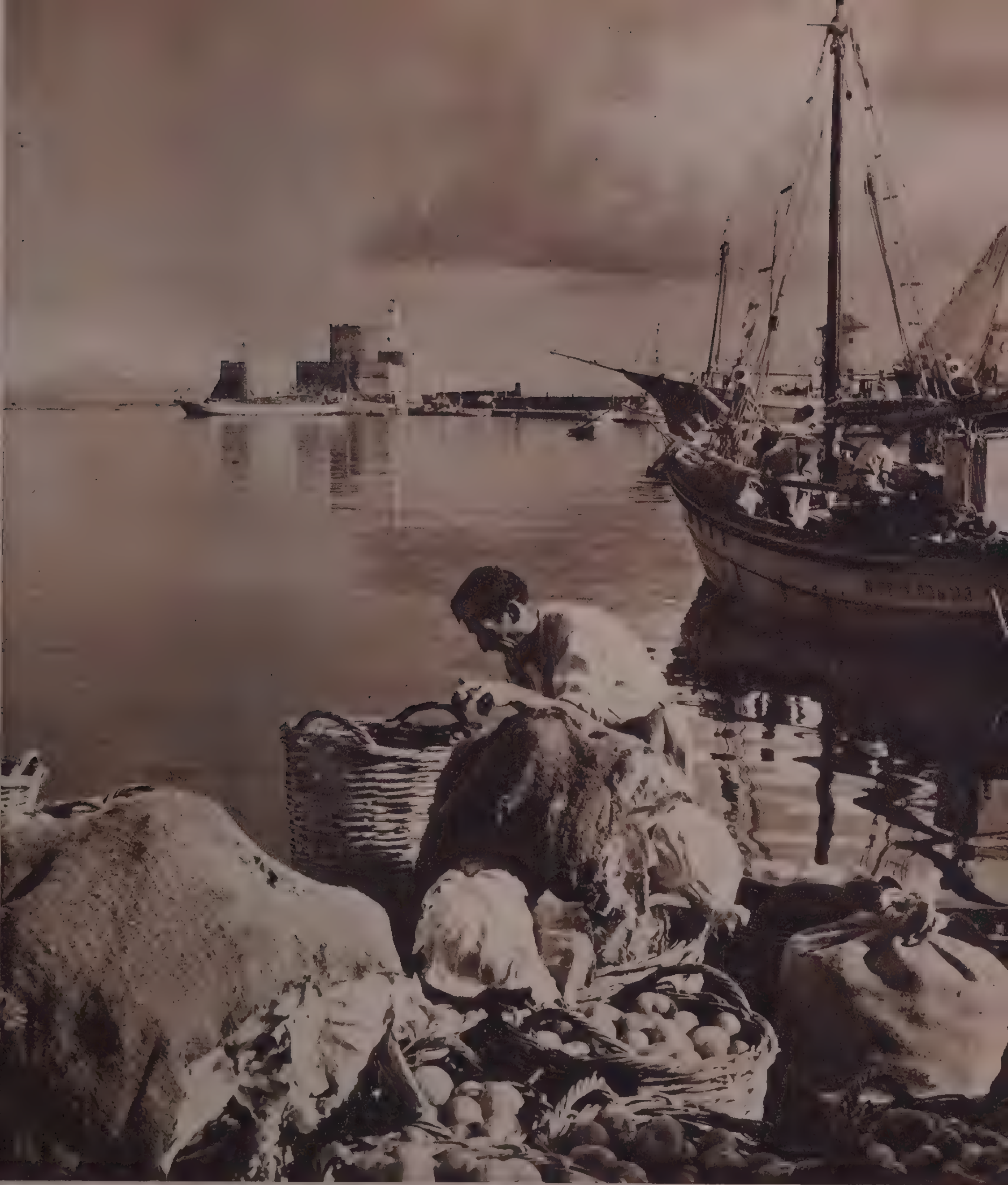
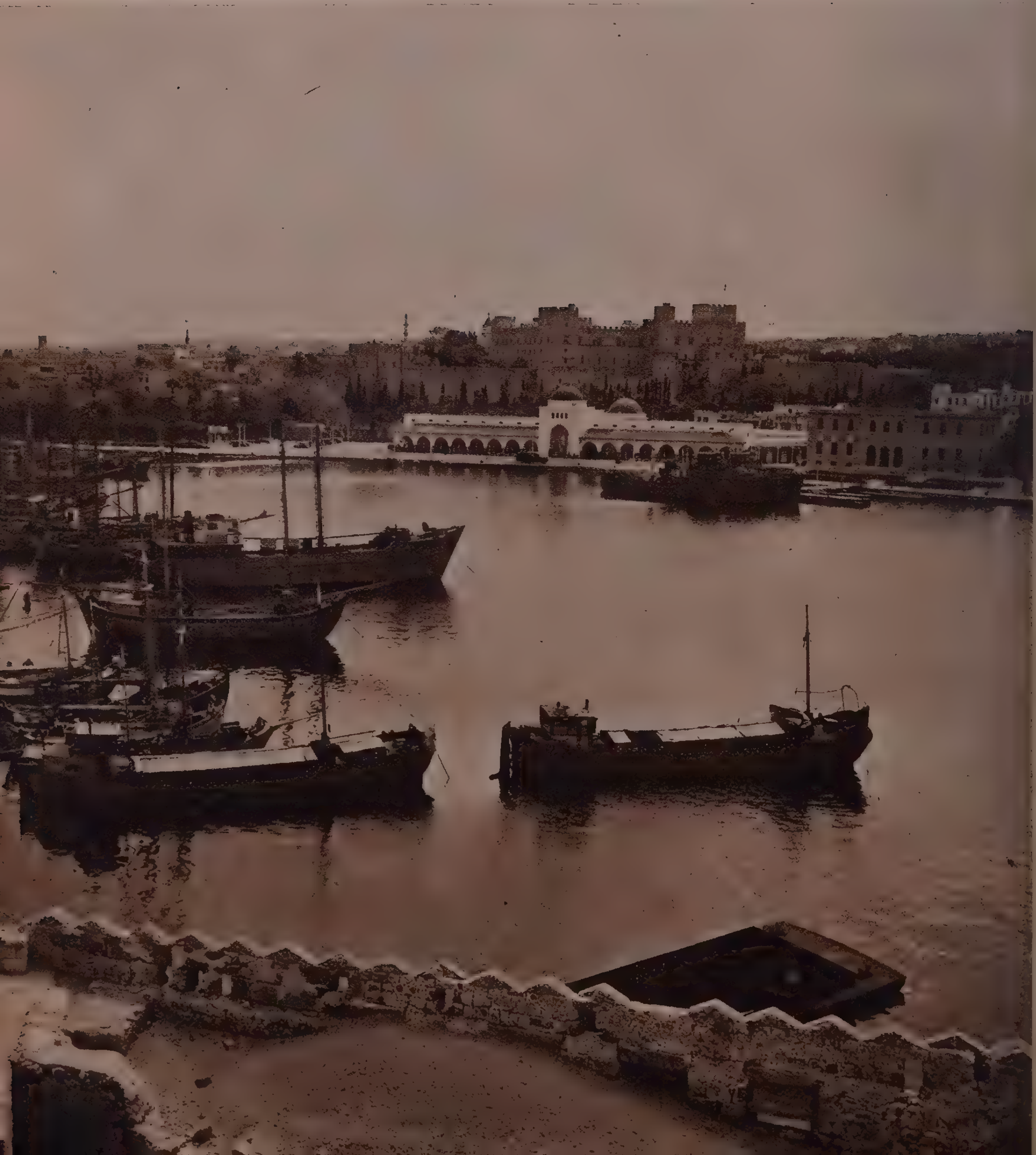
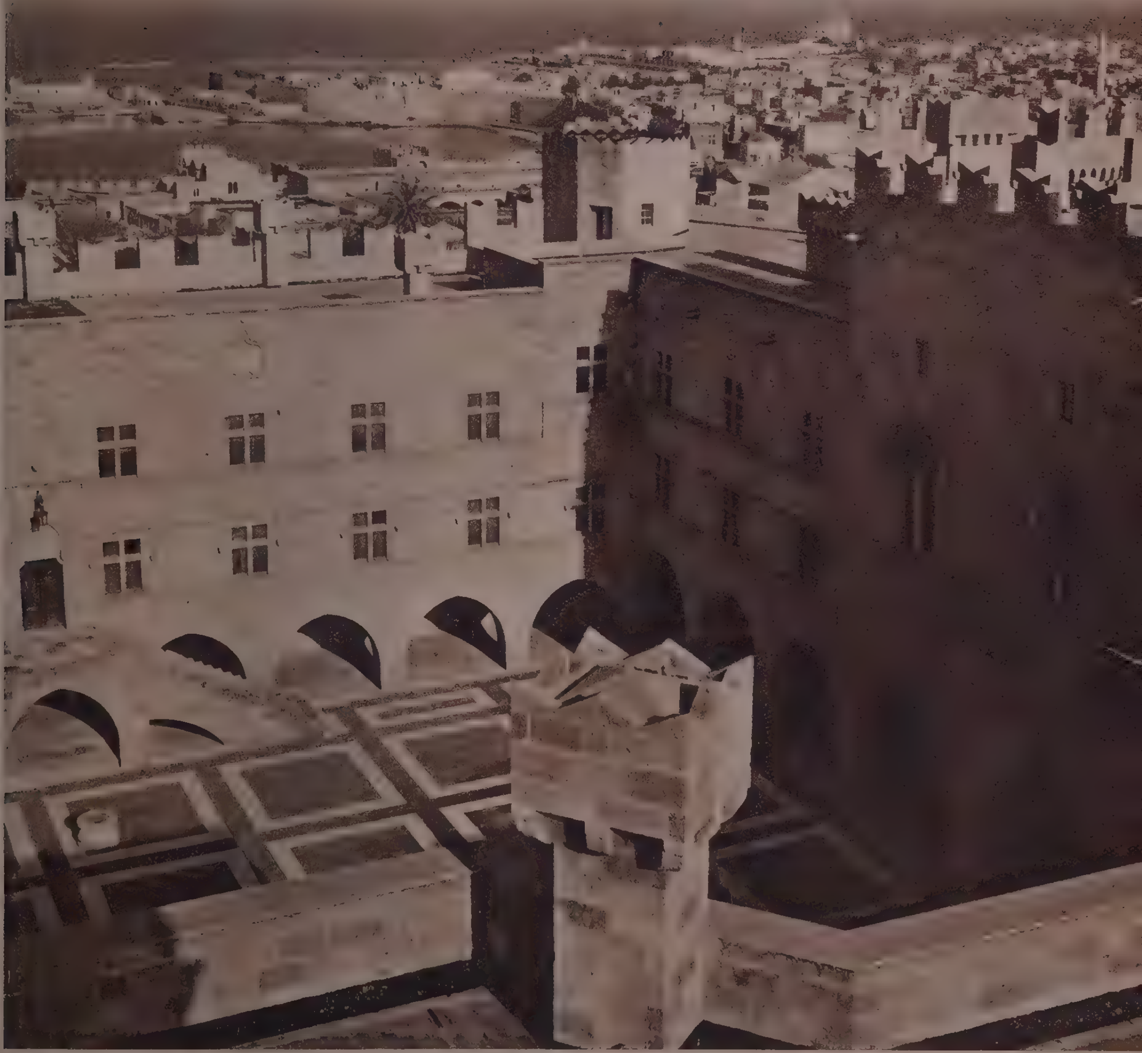


All photographs by D. A. H

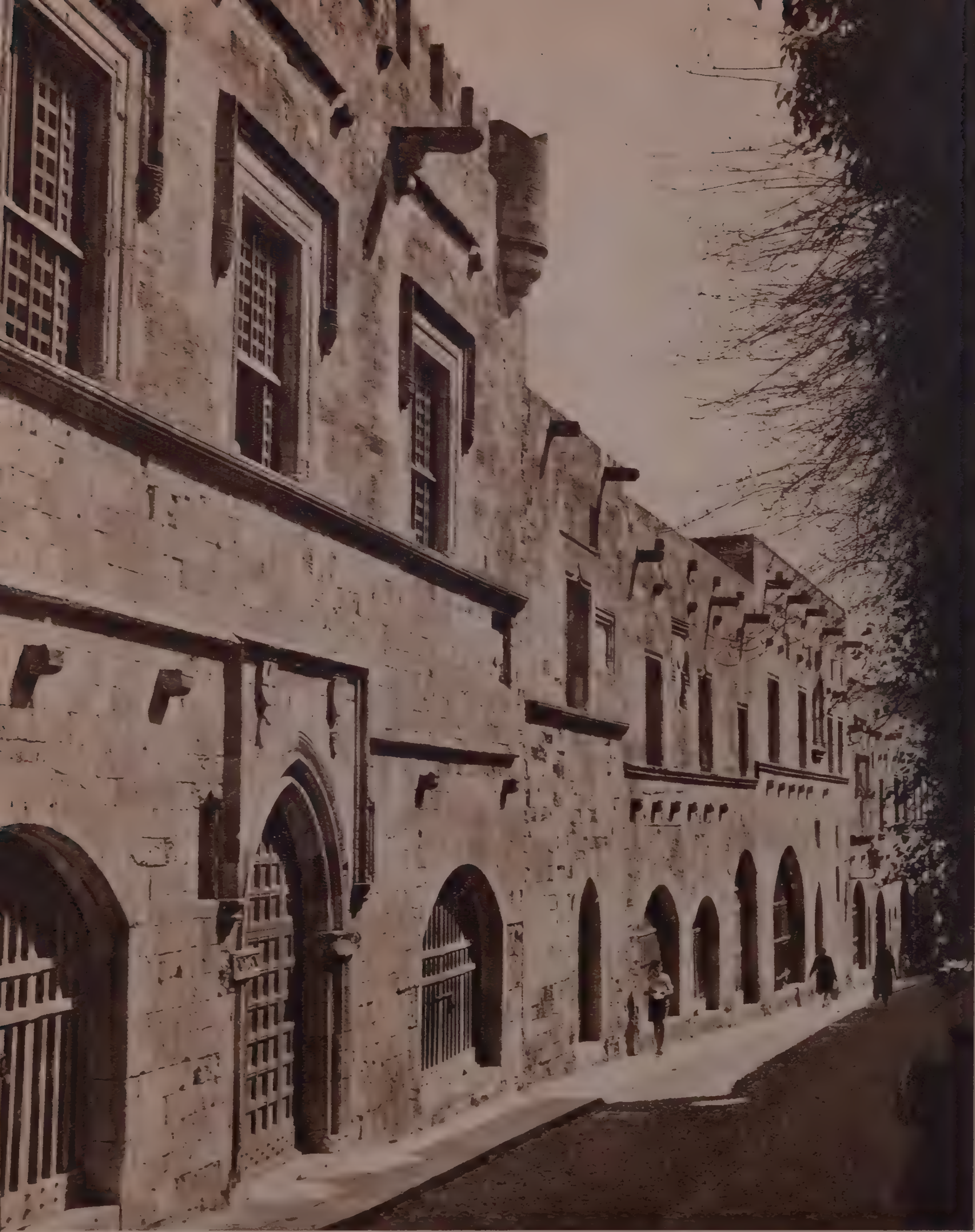
The Fortress of St Nicholas, as seen across the waters of Mandraki Harbour from the quayside of the city of Rhodes. The Fortress, a mediaeval structure, was built on the foundations of an earlier one and it is supposed to have been the site of the Colossus, one of the seven wonders of the world. The city of Rhodes was founded in 408 B.C., and succeeded the ancient city-state of Lindos as capital of the island

The view of the city of Rhodes from the battlements of the Fortress of St Nicholas is dominated by the Castle of the Knights, which was built by the Knights of St John after they had been forced to leave Jerusalem and had captured Rhodes in 1309. It remained their stronghold until 1522 when they were defeated by the Ottoman Sultan Suleiman I. Below the Castle, on the quayside, is the market, one of the buildings erected during the Italian occupation which began in 1912 and lasted until Italy's capitulation in 1943 led to the treaty whereby Rhodes was ceded to Greece with effect from January 31, 1948

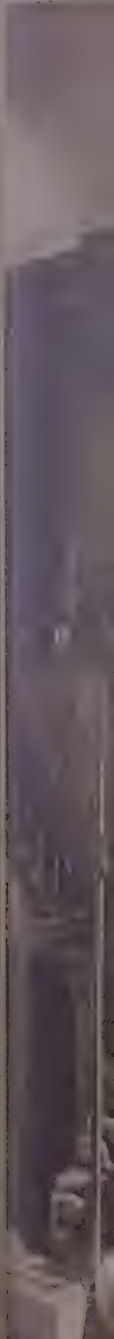




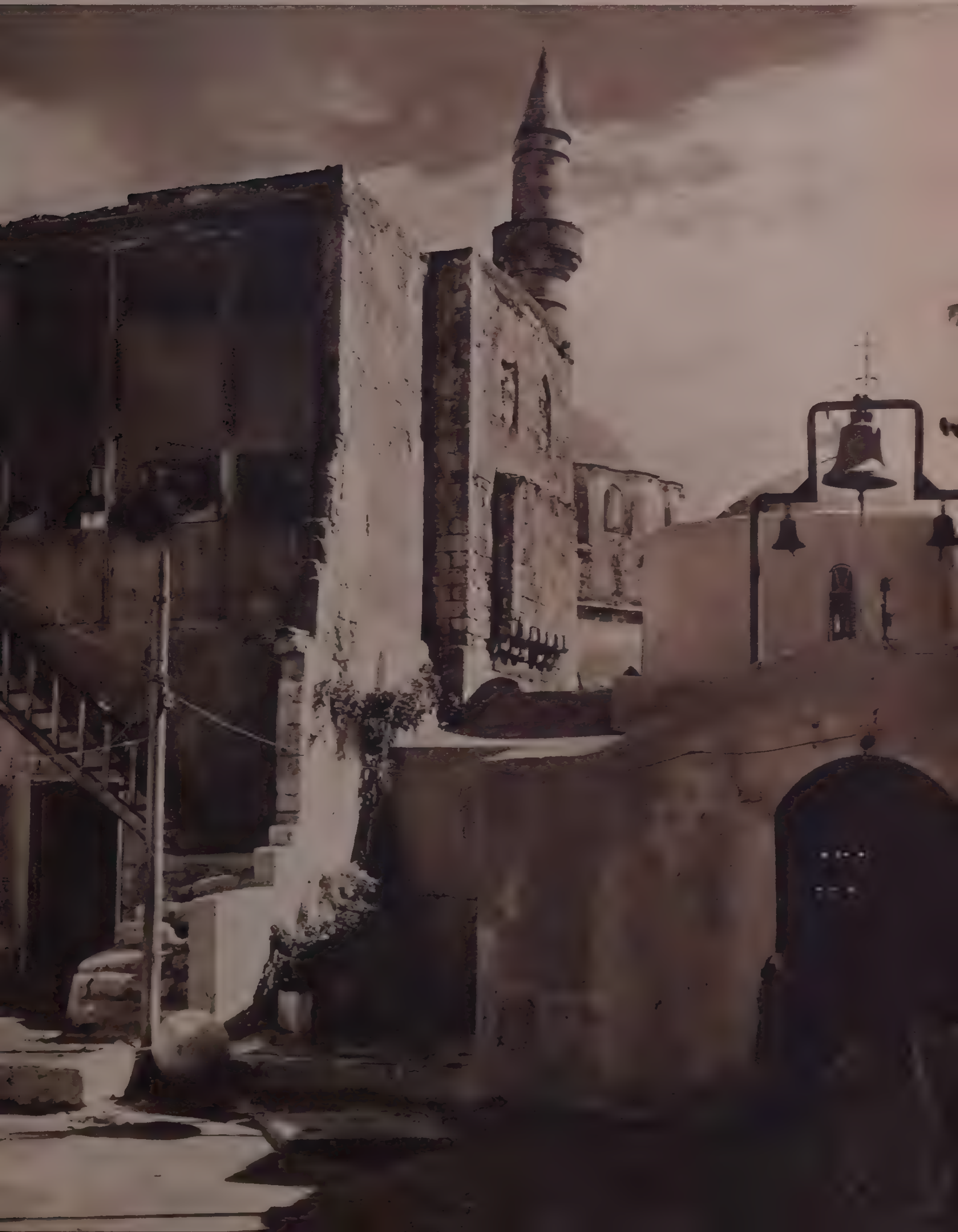
The courtyard of the "Castello", the Castle of the Knights, with the harbour and part of the city of Rhodes in the background. The long Turkish siege (in which Suleiman is said to have lost 90,000 men) did little damage to the Castle and the Italian restorations of the exterior replaced the stonework inoffensively enough, though the same cannot be said of the tasteless interior. The Order of St John of Jerusalem was divided into three classes: military, serving brothers and chaplains; and again into eight language-groups known as langues. *Sentries from each group guarded the ramparts which were separated into areas by bastions and gates. Beneath the ramparts is a deep moat hewn from the solid rock*

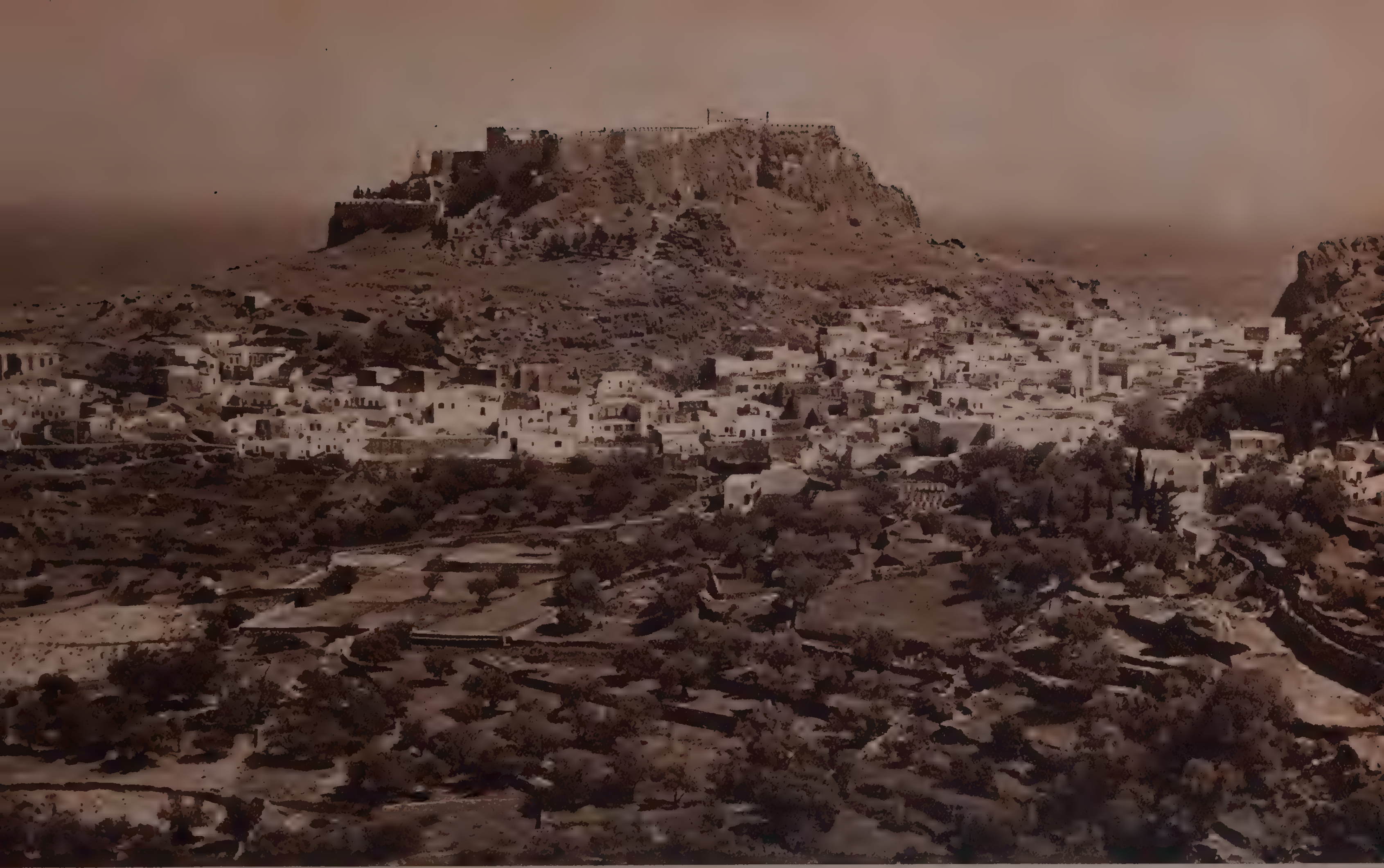


The famous "Street of the Knights", though it has been restored, still retains much of its mediaeval character. Consisting of individual auberges, *each once housing a separate group of Knights, the Street possesses nevertheless an architectural unity. The auberges are emblazoned with the coats-of-arms of the particular groups which occupied them. Italy, France, Provence, Auvergne, Castile, Aragon, England and Germany were all represented in the Order : a worthy gathering of Europe's adventurous spirits*



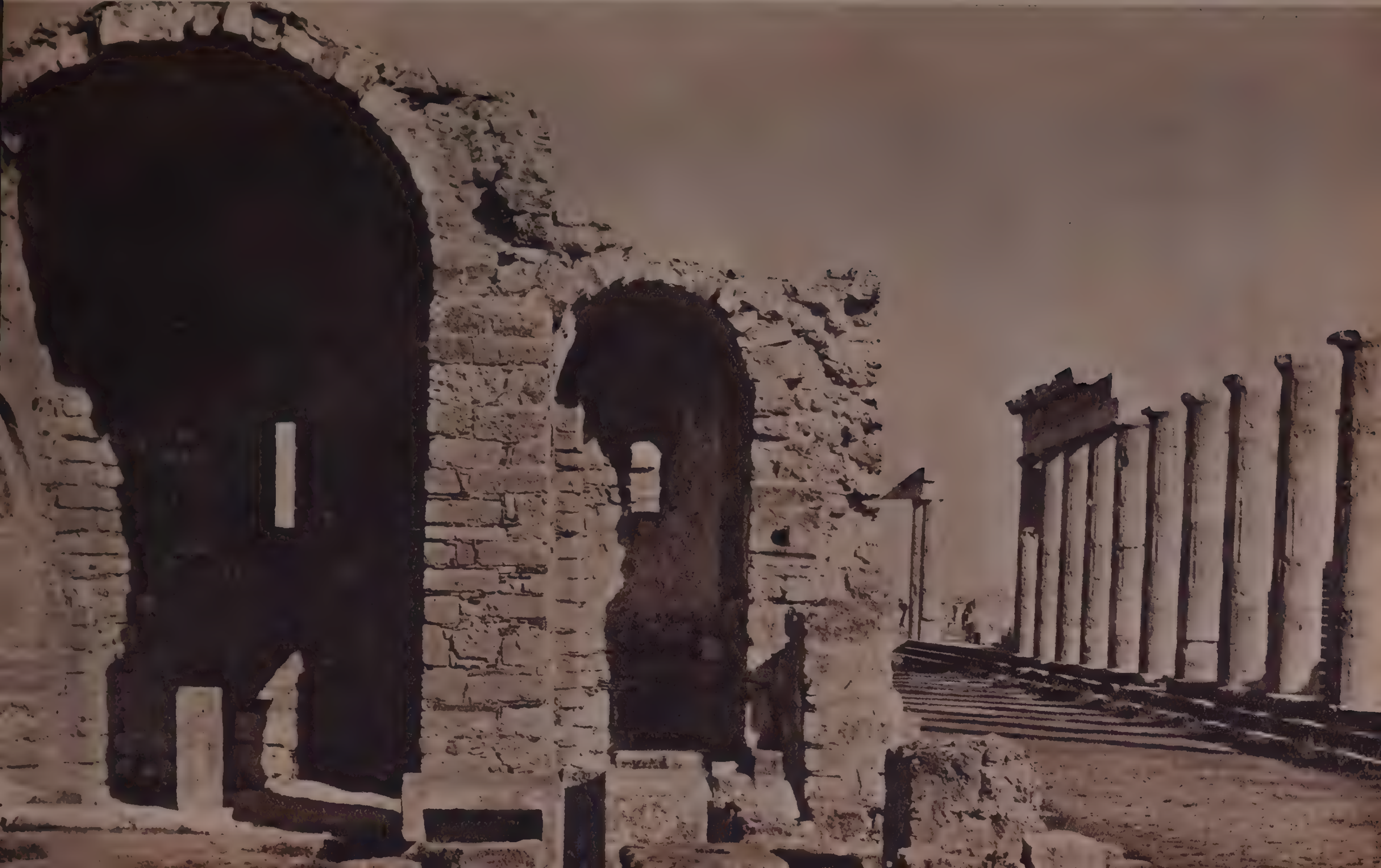
The elegant minaret of the Suleiman Mosque, Rhodes, rising above a little whitewashed Christian church, was built after the Turkish conquest in 1523. Most of the existing Byzantine churches were then converted into mosques though a few in the countryside remained unaltered. It was not until 1660 that Greek Orthodox missionaries returned to Rhodes to continue their ministry and Christian churches began to be re-established. Today Christianity and Islam live peaceably side by side in the old part of the town

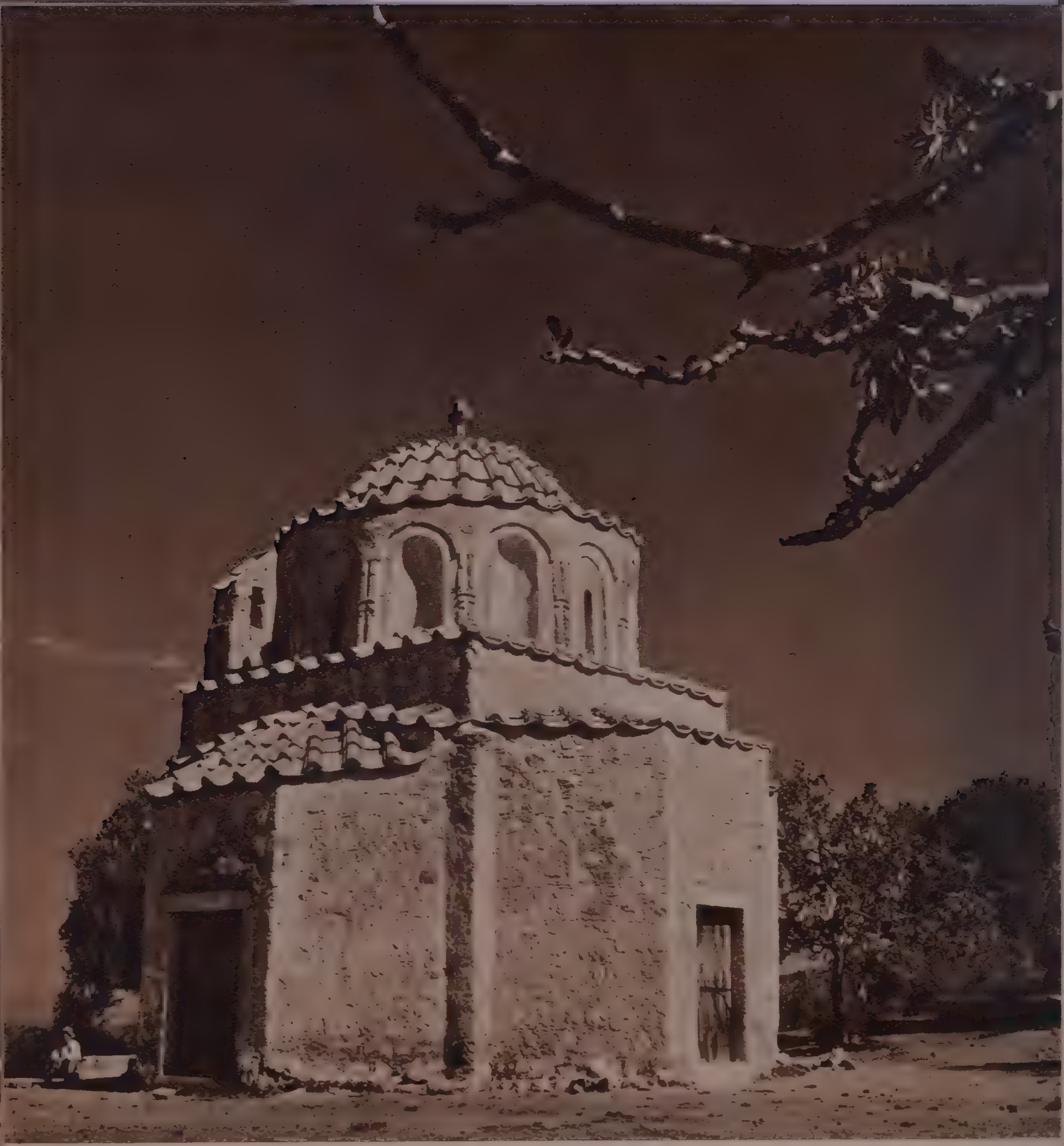




The modern village of Lindos stands on the site of an ancient Dorian settlement, famed for its civilization and commerce. Above it rises the acropolis, which was turned into a fortress by the Knights of St John. Legend says that the shipwrecked St Paul was washed to safety on the rocks nearby

The earliest ruins on the acropolis that overlooks Lindos are those of the Temple of Athene. To the right are the columns of the propylaea leading to the Temple, below which the rock-wall drops 400 feet to the sea. On the left are the ruins of the chapel built by the Knights in their fortress





The Chapel of St Nicholas the Hazelnutter, in the western part of Rhodes. Most of the Byzantine churches in the Greek islands were built between the 10th and 15th centuries. While their scale may be so small that they look like individual shrines, they were usually constructed according to the classic cruciform design with a central quadrangle in the nave mounting to a dome. Their interiors, which are often decorated with mosaics or frescoes, are hung with numerous ikons and glowing ruby lamps so that they gleam and glitter richly metal to a Jew who sent the bronze in pieces by ship to Syria where, loaded on 900 camels, it was taken to Damascus for sale to the sword-makers of that city.

Christianity is said to have been introduced into Rhodes by St Paul and at Lindos one is shown the very rocks where he is said to have been washed up on his way to Palestine. From them he preached to the Lindians. There is also a legend which tells that, while wandering about the island preaching to all who would listen, he found a warm spring at Soroni. Here he performed a miracle of healing, converting many of the villagers from nearby. To this day the shrine is sacred, not to St Paul under that name, but to Saint Soulas, which is thought to be a corruption of "Saulos", the ancient Greek form of Saul, his original name.

Whether he left any of his disciples to continue his work on the island is not known, but the Christian ideal struggled amidst the riotous pagan festivals and the temples of the Greek gods.

The buildings of the villages along the road from Lindos to Rhodes show a strong African influence. Square, whitewashed and flat-roofed they huddle as geometric white cubes around the domes of their mother church. One of the most charming villages is called Archangelos. It lies gleaming white, nestling among silver olives and almond trees against a mountain back-drop, while along its narrow streets the little black donkeys wind their way laden with produce of the fields, urged on by their women owners who wear coloured head-kerchiefs and top-boots of soft pale leather.

We looked into an open doorway to glimpse the tidy, well-arranged life of the peasants. A large arch divided the spacious living-room into two parts, the sleeping-quarters raised on a platform at one end, the walls decorated by a quantity of the now famous plates. These plates with their interesting designs, more Persian than Greek, have an individuality that marks them as essentially Rhodian. As they are apparently never used and are valued only as decoration, one wonders whether the originals were made on Rhodes or were brought perhaps as souvenirs from other lands and only later copied by inferior craftsmen.

The town of Rhodes is so dominated by the Castle of the Knights of St John, which towers over it from every angle, that to recapture anything of its earlier history one must traverse the flower-lined streets of the modern town, through alleys of magenta bougainvillea and honey-scented mimosas. Among the gardens of cypress and hibiscus are still to be found traces of its former glory, memories in stone that may be either Mycenaean, Byzantine or Saracen.

The Order of the Knights had been founded in the name of the Hospitallers of St John in the middle of the 11th century for the specific purpose of serving and healing the pilgrims to the Holy Land. During the 12th century, however, while still maintaining its religious ideals, the Order assumed a military function and joined in the struggle against the Infidels, attracting to its company courageous and romantic young men from all over Europe.

The struggle between the Christians and the Muslims continued; and after repeated attacks on the various Crusader strongholds the Muslims finally captured Acre in 1291, thus destroying the last hope of the Christians in the Holy Land. In that year the headquarters of the Hospitallers were moved to Cyprus, where they were aided in their efforts of reorganization by gifts of property from the Pope, as well as from many kings and princes of the Faith.

It was not until they had settled in Cyprus that the Knights' plan for consolidating themselves in the Dodecanese Islands (as they are now called) began to materialize. However, it took several years of intermittent fighting before the Byzantines defending Rhodes were prepared to negotiate a peace. But in August 1309 the island finally surrendered, and the Knights took over in royal manner. On Rhodes they established their own domain, building a castle-fortress as a sure defence (as they thought) against every possible attack. Though strongly defended, the Castle at Rhodes seems to have been designed more for peaceful living than either of their other fortresses at Carcassone or the Krak des Chevaliers, which like a mailed fist guards the Syrian plains from its rocky peak.

The Knights soon acquired further islands, Cos and Leros among them, and with their headquarters at Rhodes they held a valuable strategic position from which to attack the Muslims whose marauding privateers were everywhere, operating from the hidden inlets of Asia Minor. But the Turks were not so easily disposed of.

Despite the strength of the citadel and the organization of the Knights, dedicated and courageous as they were, the Infidels twice laid siege to the island. The Knights held out against tremendous odds and fought fiercely but in the end they succumbed with a loss of 230 of their number.

In December 1522 Rhodes surrendered and on New Year's Day 1523 the sorrowful Knights set sail for Crete. The terms of the capitulation seem to have been extraordinarily generous, for they were allowed to take their arms and all possessions, and leave in ships provided for them by the conquering Sultan. Even the civilians were given the right to go if they wished and were told that, if they stayed, they would be exempt from all taxes for five years, and above all, that freedom of Christian worship would be guaranteed. For six years the Knights were homeless, then in 1530 they finally settled in Malta.

Today the Castle, the hospital and the handsome Rue des Chevaliers still stand though much restored. During the Italian occupation the Castle was given a completely new interior though the magnificent outer defences, which lend great style to the whole, have been preserved; the Rue des Chevaliers, despite renovations, retains much of its original appearance. To walk down this cobbled street between the golden façades of the ancient auberges, each of which housed a separate group, is a fascinating experience. Some have coats-of-arms emblazoned on their walls, others are ornamented by carved gargoyles and handsome cornices, but each conforms to a noble unity of style and colour; nothing has been allowed to interrupt the mellowed harmony. Yet despite this solid reminder the influence of the Knights seems somehow superficial, superimposed with a grand gesture on an earlier truth that lives on unhampered in the traditions of the people, the manners and customs, the folk-songs and festivals of Greece.

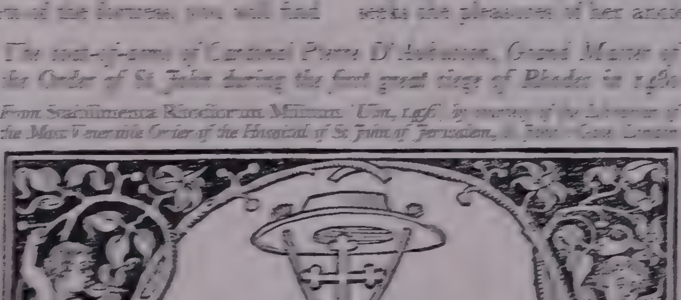
In the harbour, though shadowed by the walls and towers of the fortress, you will find the real Rhodian just as he has always been. He is there putting out his lobster-pots in the clear water or mending his nets, singing a sea-song as he works, or again sitting at one of the taverns drinking mastic, stroking his long moustaches, with one eye on the setting sun and his mind full of hopes for the success of his new boat. When the sponge-fleet puts to sea he will be at the tiller, steering her towards Africa just as his forebears did, faithfully maintaining the reputation of the islanders as sailors and shipbuilders who could rival any sea-going nation.

The town rises from the harbour's edge where modern Italian buildings stare out at the old fort of St Nicholas, once, it is said, the foothold of the Colossus. Upwards slope the flowering gardens, past the tall pink minaret of a mosque guarding the Turkish quarter, and on to the park, scented by tangerine and lemon, where shady trees surround the comfortable Hotel Plaza. Beyond, the pine-groves climb the sides of Monte Smith, of all names, so christened after Sir Sydney Smith, the conqueror of Napoleon at Acre, who once set his battle headquarters on the hilltop. There again we meet history, for the early rock-tombs are now exposed on the hillsides, and the tall columns of Apollo's temple still watch the quiet waters of the bay, as the setting sun bathes the mountains of Anatolia with a rosy light.

Rhodes remains the jewel of the Aegean. Easy of access and modernized sufficiently to offer every comfort, she retains a quality as yet unspoilt, showing that courtesy, beauty and character may still be found in a world torn by the factions of progress. There she lies, the radiant daughter of Aphrodite, singing her sea-songs to lure the traveller who seeks the pleasures of her ancient ways.

The coat-of-arms of Cardinal Pierre D'Aubusson, Grand Master of the Order of St John during the first great siege of Rhodes in 1480

From Stabilimenta Rhodiorum Militum (Ulm, 1496), by courtesy of the Librarian of the Most Venerable Order of the Hospital of St John of Jerusalem, St John's Gate, London



Trans-Siberian, 1956

by LOIS MITCHISON

The author recently spent two years as a newspaper correspondent in the Far East. The Manchester Guardian *and* Glasgow Herald *published her articles; she also worked for the Associated Press*

NONE of the foreigners in Peking knew much about the present Trans-Siberian railway to Moscow and the train on from there to East Berlin and Victoria. The train used, I was told, to be the cheapest as well as the most romantic way of getting back to England from the Far East. Twenty years ago, a first-class ticket from Hong Kong or Peking cost, so people said, between £20 and £30; but it was a crowded, uncomfortable journey. The stories conjured up pictures of large and ravening wolves chasing a small, wood-burning, puffing train through the wilds of Omsk.

My mother by letter recalled her story of travelling on the western part of the Trans-Siberian in the piping days of the thirties, peace and co-existence with English intellectuals. Searching through her dictionary for the correct term for "comradely solidarity" my mother inadvertently expressed much stronger feelings, and then spent the next twenty-four hours trying to take them back. She passed the night uncomfortably sheltered by her typewriter, acting as a temporary and inadequate protector of virtue.

The young man at the Peking Intourist, however, knew no stories at all about wolves or virtuous resistance. He was disappointingly matter-of-fact. The Trans-Siberian train, he said briskly, took eight days and five hours to cover the 5800 miles between Peking and Moscow. Moscow to East Berlin was another thirty-six hours in a faster train. (The whole journey from Peking to Victoria took eleven nights of travelling time, including the night British Railways marooned us in the railway waiting-room at the Hook of Holland.)

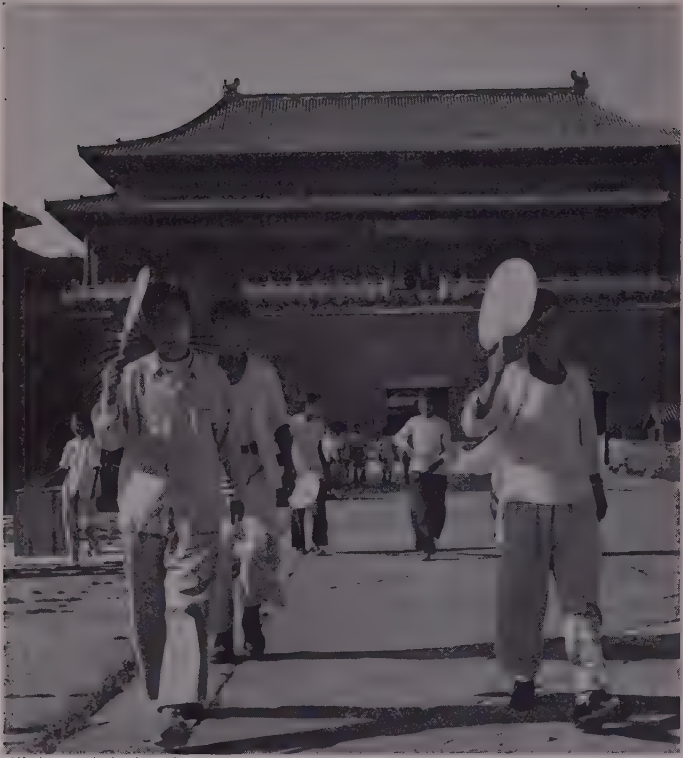
Did I, the Intourist young man wanted to know, wish to book right through to East Berlin or only to Moscow? Unfortunately I could not pay for my ticket on from West Berlin to Victoria in Chinese currency; but, he said, I should have no difficulty at all in crossing the Iron Curtain on the Berlin Underground. (He turned out to be quite right. Nobody in Berlin even wanted to see my passport, and I am still not sure which Underground station was the first Western one and which the last Communist. I found it a rather disappointing let-down for my personal break through the Curtain.

I booked my ticket with the Peking Intourist through to East Berlin with a three-day stop in Moscow. The Peking-Moscow part cost me £123 first class, and on to East Berlin, second class, another £30. If I had travelled second all the way the Peking to Moscow ticket would have been £94; and it was possible, the Chinese Intourist said, to travel to Moscow third with a sleeper for £64.

The Trans-Siberian train I was on had no third-class berths. But I know what they are like from other Russian and Chinese trains . . . long rather smelly compartments with narrow leather-covered berths stacked close together in layers of three: not impossible, though not very comfortable for a long journey. But the next time I travel on the Trans-Siberian I shall definitely travel second. There are four berths to a compartment arranged like a cleaner version of an English third-class sleeper with proper bedding and a little more room.

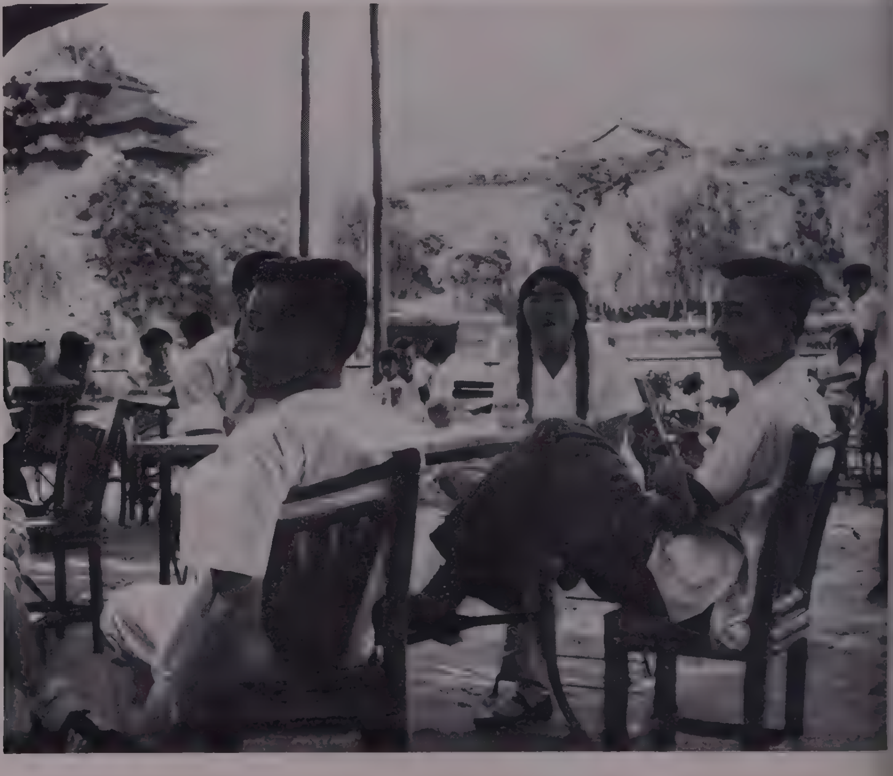
My first-class compartment, however, was very comfortable—in the best Victorian. Emmett-like way. It was a carpeted compartment of very dark polished mahogany with a lot of shining brass bits and pieces. There was a table-lamp with a blue silk pleated shade and an armchair with three white lace antimacassars on it opposite our two berths. We shared a small washing-compartment with the two men next door to us. It had the biggest wash-basin I have ever seen, but there was never any hot water. The cold water dripped in a small reluctant trickle and occasionally dried up altogether, but we had a great many mirrors set into the mahogany round the wash-basin and equipped with polished brass shelves.

The whole coach was kept very clean by the two Russian train attendants going round with vacuum-cleaners every morning and afternoon. When it wasn't raining it was very hot in the Manchurian and Siberian summer country and I had my own personal fight with the train attendants because I wanted to keep the window a crack open; but the open window let in dirty smuts onto the attendant's

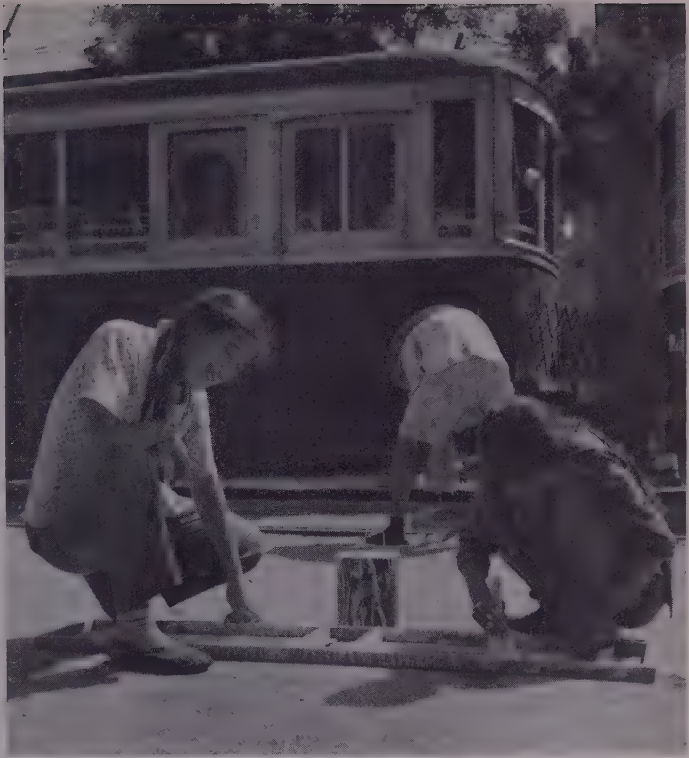


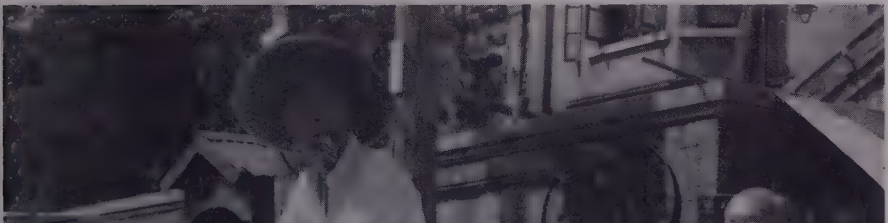
All photographs by the author

(Left) *Closing-time at the Forbidden City, Peking: sight-seers leaving the former home of the Chinese Emperors and their court, which has been restored as a museum. The Chinese have always displayed great tidiness in their clothes; now the clothes have become even tidier as a result of the revolutionary passion for public cleanliness and of more money being spent at the lower economic levels.* (Below) *A party of young people, probably cotton-operatives, having tea and melon-seeds on Sunday afternoon in the park near the inner wall of the Forbidden City. The girl with them is a revolutionary phenomenon as it is still by no means common for a girl to be seen in a public place with a group of young men*



(Right) *Peking street-scene. Women working on the roads are also a recent phenomenon, especially young and respectable ones. These girls are amused and pleased at being photographed as specimens of the New China. They are painting white lines to keep cyclists away from the main traffic. Traffic-control is a source of pride: modern and progressive and 'just like what they have in Moscow'.* (Below) *A fine old Chinese gentleman who, with his vanishing way of life, is 'on the way out' like the fine old pedicab man who is taking him down the main shopping street of Peking. Pedicabs are thought degrading because someone else has to work to push you along—also, no modern city (such as Moscow) has pedicabs*





Peking Station. Seers-off bid farewell with a song to a visiting Russian delegation about to make the long Trans-Siberian journey to Moscow

The seen-off, with her bouquet of gladioli. The baskets are travel-gifts of fruit, which is not so expensive in Peking as it is further north

beautiful white antimacassars and tarnished his beautiful shining brass.

The attendants had their own private little hutches at the end of each compartment. There was a samovar with a charcoal fire under it opposite them and they spent most of their time drinking glasses of tea they had just made for themselves. Three or four times a day they brought the passengers tea with the glasses sitting in wrought brass containers. When the attendants found I was English they brought me more tea than anybody else to show they knew about English national habits.

The first-class coach I was in was full of Chinese graduate students and army officers on their way to courses in Moscow. The girl I shared with was going, she told me, to "a political course" at Moscow University. She had bought a new bright pink jersey suit and pink ankle-strap shoes for it. The men students wore the blue high-necked officials' uniform of China, sometimes the top tunic only with silk pyjama trousers, but they never had open necklines. The second-class compartments were full of not very important Russian technicians and their wives going home after their tours in China. They wore striped flannel open-necked pyjamas or winceyette nightdresses under dressing-gowns and never changed from them even when they strolled about the station platforms or ate in the restaurant car.

It was only by accident that I shared my compartment with another woman. Neither the Russians nor the Chinese bother to sort the sexes on long train journeys. For the two nights from Moscow to Berlin I shared with a Russian professor of medicine on his way to an East German University, his big blonde wife, and a Russian engineer. The professor talked a little English . . . the Salk Vaccine, he said, was the great new thing Russian doctors were talking about. His wife told me in German that I wasn't eating enough and pressed me to lunch off their sturgeon sandwiches, tins of sardines and the bottle of musky red wine the professor bought at Brest.

Food was always a problem for me on Russian trains because of the very phoney rate at which dollars and pounds buy roubles. A rouble is really worth fourpence but you buy it, unless you are a diplomat or deal on the Moscow currency black market, for nearly two shillings. At this rate an ordinary train meal in the Trans-Siberian restaurant car cost about £2, and the platter of bacon and eggs I had for most meals cost nine shillings. But the Russians of course took the prices as quite normal and they ate and ate. I didn't blame them as the restaurant car served the most delicious, fattening sort of food: double cream sauces, everything fried in the best butter and sprinkled with truffles and mushrooms. I saw one Russian family breakfasting off sturgeon soup, eggs and bacon, cold sausage, butter-fried potatoes, creamy beef stew and black bread. The father of the family washed it all down with Russian brandy, the mother and the children with tea sweetened by strawberry jam.

Most of us supplemented the restaurant car by buying from the food-stalls on the station platforms. In China the station food-sellers had glass display-cases, and they wore white overalls and white surgeons' masks of gauze. They were all lined up in rows, everybody in his proper pitch, and they used tongs to pick up their meat dumplings and whole roast chickens. When the train steamed out to the tune of the station loud-speaker the Chinese food-stall people, like the Chinese railway staff, stood to attention, sometimes with their hands up at a military salute.

The Russian food-stalls were mostly kept by big-booted, full-skirted Siberian women with brightly patterned handkerchiefs tied under their chins. They were tough-looking, pioneer-type women with pioneer-type dirty hands and finger-nails. They sold their home-grown tomatoes, sturgeon soup, rye bread and sausages, Russian tinned food, and, most popular of all, cornets of ice-cream. There was no nonsense about not licking your fingers and then picking over the food, or of using unnecessary glass cases. The station loud-speakers didn't seem to work so well in Russia and anyway the Siberian women were all far too busy chatting to each other and clearing up their stalls to bother about standing up as the train left. The other group of Siberian station sellers were the local small children selling paper cones of blueberries, raspberries and wild strawberries. When the train pulled out they ran after it to see if they could race the engine.

Going into Russia from China I felt as if I were moving from the shining, brand-new, Communist Jerusalem to the Communist Jerusalem forty years on. Of course some things were the same. The last Chinese station in Manchuria like most of the others has its big portrait of Mao Tse-tung, warts and all, beaming over the entrance. The last Chinese town has its slogans up to Sino-Soviet friendship, fulfil the five-year plan,

Railway bookstalls are filled with cheap and state-subsidized books, which are a great thing in the New China. Casual readers are encouraged

A food-trolley at Harbin Station, licensed by the railway authorities. Food is hygienically packed and beautifully displayed in glass cases

Below. Sellers of fruit and vegetables at a wayside
ation in Siberia. Wild blueberries, raspberries and
rawberries are sold in paper cones. They have been
athered by the children to sell for pocket-money: all
e big fresh fruit, but a little grubby and squashed

op right. On each Trans-Siberian train there are sev-
al guards. This girl guard looks after the goods section.
Bottom right. The ice-cream-eating contingent among
e passengers on a Trans-Siberian train. Ice-cream has
en bought at a trolley-stall on the platform. At the
esent rate of exchange ice-cream costs 2/6 a cornet

and get rid of Chinese rats and sparrows. The Russian stations are almost equally bannered. Most of them have two sporting youths—silvered statues at either end of the platform—a boy with a football and a busty girl with a tennis racquet. Indoors Stalin, whatever may have happened to him in Moscow, has not yet left the third-class waiting rooms of Siberia. He is always there, either with uplifted finger in a larger-than-life-size statue or in oils gesturing widely at the Siberian open spaces. Lenin is in the first-class waiting room, a smaller statue but with a bigger smile.

Both China and Russia are political countries with, to the Western eye, too many policemen about, too many officials, and too many customs forms. But the Chinese customs carefully pulled out every roll of photographs I had, planting large thumb-prints on the negatives and taking them away to consult over their possible strategic importance. They were finally returned to me, all complete, by the Chinese officer in charge. To have taken such beautiful colour-prints, he said smiling politely, I must have greatly enjoyed my stay in his poor country. The Russian customs officers had no polite smiles and just as many forms. I was to sign here and here. Did I have any Siberian Musk Deer horns with me? No? They looked at my luggage which was bulky and packed in kit-bags, sighed, and said "niet, niet" when I made a half-hearted attempt to get it down.

Russian policemen are not universally unattractive . . .

Across the border I went round the first Siberian town with a group of young Chinese fresh from germ-warfare tidies-up and no-litter notices in the new aseptic China. They were shocked. The Siberian town had bits of paper blowing down the streets and an enormous and untidy rubbish-heap off the town centre. Where the station road joined the main street there were two wooden privies with their doors swinging open. They were obviously still in use and equally obviously hadn't been cleaned for several weeks.

This little group of Chinese had read all the Chinese posters which exhort Chinese youths to do P.T. exercises every morning. Healthy bodies, the characters on the posters say, are needed to help build up our Socialist Motherland. So the Chinese passengers poured out onto the station platforms at the train's halts. They marshalled themselves under their cheer-leaders, and stretched and knee-bent, and touched their toes, and lifted their feet in on-the-spot running exercises. The Russians found it fascinating. They stood round gawping and when they felt chilled offered each other little nips from their hip vodka-flasks.

The Chinese of course drank orangeade and warm water, and they had too much to do to waste their time on alcoholic nips. The first night we were in Siberia I went along late to the restaurant car. There were four of my little group of Chinese acquaintances huddled at a table with their heads together, their dictionaries open and their private Russian word-lists on the table in front of them. A fifth member of the group, however, had got separated from his friends. He was sitting cowered into a corner at a table beside

(Above) *No visitor to Moscow is allowed to miss the permanent agricultural exhibition, Intourist's pride and joy.* (Below) *In the Kremlin, now much easier of access to both Russians and foreigners as a museum of the Muscovite past, the homes, churches and offices of the Tsars are open to Sunday crowds*

an enormous, fat, booted Siberian overflowing over his restaurant chair. The Siberian's arm was round the little Chinese and he was crooning a gentle lullaby to him. Every now and then he pressed the little Chinese to a nip from his vodka-bottle, and the Chinese smiled and smiled, and shook his head and waved his hand about. It was all particularly difficult for him because every good Chinese Communist knows (and the little Chinese had every mark of a good Communist) that the Russians are China's "respected elder uncles with high technical and socialist levels". I have sometimes felt just the same as the little Chinese myself in an evening with my most respected American colleagues.

But I still like my American colleagues and I liked the Russians too. They talked to me in German, English, and very loudly and slowly in Russian which surely, surely, they thought, anybody but a stupid and ill-willing foreigner must be able to understand. We drank toasts to "the greatest English poet, the Lord Byron" coupled with Shakespeare, Lermontov, Tolstoy and Theodore Dreiser. They knew, they said, all about England. They had read it up in the works of "that great English novelist Charles Dickens".

The Russians made me feel very feminine, fragile, and desirable. This was all the nicer after China where any Western woman feels all hair, bulk and awkwardness. But I refused the pressing Russian invitations to drinking-sessions in their compartments. This was mostly because such very odd things happened to time on the Trans-Siberian that I felt permanently sleepy. Out from Peking for the first two days we ran on Peking time, just about the same as the sun. At the Siberian border we crossed immediately onto Moscow time, five hours in front of the sun, so that it was dark at two in the afternoon and light at two in the morning. Meanwhile the restaurant car ran on Siberian time, somewhere between Moscow and Peking, and the local stations either had local time showing on their clocks, or Moscow time, or the clocks had just stopped. There was no way of knowing which. The elaborate timetable we had about when the train was due to arrive at and leave stations didn't help much, because though the train was punctual to the minute leaving Peking and arriving at Moscow, it was so very erratic in between that even the train attendants didn't know when it was going to pull out of most stations. The train just whistled twice and started. The Chinese and I got very expert at swinging ourselves and each other up onto moving coaches.

Catching up on my sleep was interrupted by the coach attendant who used to come and wake me up to look at what he thought was the best scenery. He woke me up twice to look at Lake Baikal in East Siberia. We ran along its shores for five hours with the Russians all standing in the corridors looking very romantic and quoting poetry. The lake looked to me a bit like a West Highland loch, particularly as it was raining and the hills on the far shore were hidden by mist. There were campers, too, in wet-looking tents all along the lakeside trying to blow up their damp wood fires.

In some ways the most exciting country was central Siberia when we ran past mountains into mile after mile of pine, larch and beech forest. There was nothing at all in the forest except every fifty miles or so a railwayman's cottage with his cabbage-patch cut out of the wood round him, and his family leaning over the fence to wave at the train . . . like the stage set for a Chekhov play. Further into Siberia we ran into heavily farmed corn-country and then to industrial towns, smoking and very ugly.

I also had a suitcase full of paper-backs I had bought by weight in the Peking covered market. There were a lot of American thrillers which became rather tediously similar in their gore and poker-faced detectives after the first three days, Wendell Willkie's *One World* which makes a pretty comparison in decades, and what I enjoyed most, Charlotte Brontë's *Shirley* and *Our Village* by Miss Mary Mitford. I also had *War and Peace* and a book about physics. I hoped these might do me good when I had to read them after I had run out of everything else. But I stretched out *Shirley*, slept, drank with the Russians and as usual never got beyond the fifth chapter of *War and Peace* where all the characters seem to be called "Prince", like labradors.

This is one of my unsettled problems about the Trans-Siberian. I very much hope to go back to the Far East. Aeroplanes and boats make me sick and bored, so I would like to travel by train again. Obviously one must take a great many cheap sandwiches bought in England. But what, I wonder, about reading? I thought possibly the complete works of some of the lesser Victorians like Charlotte M. Yonge (*The Heir of Redclyffe*, *The Daisy Chain*) and Mrs Henry Wood (*East Lynne* with its seducing Radical M.P.), but I am very much open to anybody else's suggestions.

Farming in South Brazil

by JAMES A. TAYLOR

Mr Taylor, who is Lecturer in Geography at the University College of Wales, Aberystwyth, attended the 18th International Geographical Congress at Rio de Janeiro last August. He enjoyed special facilities for visiting the districts of Southern Brazil where settlers of many nationalities have composed the intricate pattern of diverse kinds of farming which he describes herein

A BRILLIANT dawn was just breaking as our plane took off from Santos Dumont airport and, dipping a graceful wing to Sugar Loaf, flew directly inland over the cloud-topped Coast Ranges. We had to be content with a passing glance at the vastly developing metropolis of São Paulo City, for our destination was Maringá, a place much further west beyond the Rio Paranapanema in the next state of Paraná. The distinctive purple hue of the soil which we had noticed on the São Paulo side of the river was continued westwards into northern Paraná. Our plane flew conveniently low and a veritable land-use map in full colour was spread before our eyes. Prominent blocks of dark green represented the remains of the originally virgin forest. Paler green stretches of pasture threaded along the valley bottoms; this land would be most liable to frost and most difficult to drain. On the adjacent slopes neatly divided cultivated strips and blocks revealed the purple hue of the "*terra roxa*". The regular arrangement of the coffee-trees contrasted with the irregular scatter of occasional yellow blotches on the cultivated land.

Throughout my tour of South Brazil's agricultural areas I was accompanied by an official of the Brazilian Ministry of Education and Culture whom I will name Orlando: an unfailingly cheerful and indeed humorous character of whose quiet competence I am glad to make public acknowledgement. Without his help I could never have seen so much in so short a time. I asked him what the yellow blotches might be. "Those," he explained, "are the remains of piles of rice-husks put onto the land for manure." "What!" I exclaimed, "something actually being *put into* the land rather than *taken out* of it!" Orlando, who had a sense of humour, retorted: "Yes, so many of the farmers down there are not Brazilian at all! You will meet Poles, Ukrainians, Germans, Czechs, Italians, Japanese, etc., some of whom farm for tomorrow as well as for today. Too many Brazilian farmers have farmed only for today and thus so much of our agriculture has lacked a stable and efficient basis."

"It certainly looks like an organized landscape," I remarked. "Yes, indeed," returned Orlando. "It represents something unique in Brazil—a really planned agricultural economy, initiated, you will be pleased to hear, under British capital over thirty years ago." It emerged in subsequent conversation that the Paraná Plantations Ltd, a company formed in 1925 by Lord Lovat (who had previously had a hand in the Gezira project in the Anglo-Egyptian Sudan), financed the early colonization and transportation schemes in northern Paraná. The kind of property created by the company was planned to be relatively small in area with independent ownership and accessibility not only to usable roadways but also to new urban centres. "Look," said Orlando, illustrating his point, "look how those tracks follow the ridge-tops and feed into major roadways linking the settlements. That big town we have just passed is Londrina and here coming up are Cambé and Rolândia." I noticed how neatly geometrical these planned settlements appeared from the air. The road-network ran over the countryside like purple ribbons; occasional vehicles churned up long thick trails of purple dust in their wakes.

Presently we landed on a *terra roxa* runway at Maringá, a town only nine years old and yet possessing in 1956 as many as 40,000 citizens, according to its local authorities, who in the light of their achievements are perhaps entitled to exaggerate a little! After an enthusiastic welcome by the chief inhabitants, we went by very bumpy bus to 'town'. Crude wooden one-storey buildings interspersed with relatively newer multi-storeyed concrete ones were aligned along what were obviously destined to be wide, tree-lined (but as yet generally unpaved) boulevards leading into well-planned circular *praças*. One could taste, through the reddish dust hanging in the atmosphere, the flavour of modern Brazilian urbanization, the need for the speedy appearance of spacious avenues and at least a few first-class buildings. The Grande Hotel Moderno at Maringá was such a building. It had been open only two weeks and had every modern convenience imaginable in its rooms—except television! But just give them time: the first cinema at Maringá was so profitable that a second one is being built with a wide screen. Yet just outside the city limit are large areas of absolutely virgin forest.

The day following our arrival in Maringá we travelled some sixty miles by bus across the River Ivaí to Cianorte, a 'township' scarcely two years old and yet consisting mostly of concrete buildings located precisely to a detailed town plan. After a *churrasco* (a barbecue party) with these pioneer coffee-growers in the heart of the forest we returned to a wonderful banquet at Maringá and afterwards sipped refreshing iced whiskies whilst George Wilhelm Gottheim, a German *fazenda* owner, put the last touches to an unforgettable picture of a new agricultural landscape created out of the wilderness of forest and a new agricultural system introduced alongside the old, all financially geared to the supreme cash-crop: coffee. George left Germany in 1937 to find a new independent life in Paraná. He worked first as a labourer in forest-clearing teams and then ultimately took over some land of his own. He built a home and his *fiancée* came out from Germany to marry him. There were three types of property contract open to George.

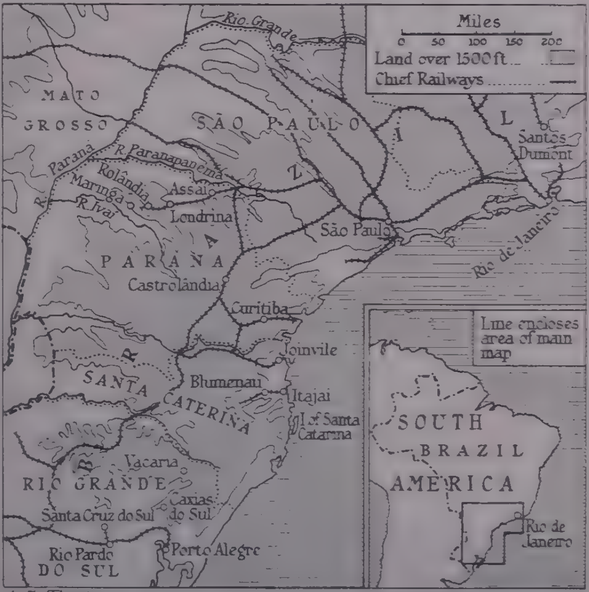
(i) The landowner pays for the tree-felling, ploughing and coffee-planting. The 'tenant' takes care of the coffee-trees for four years during which time he derives income proportional to the number of trees in his care and also to the yields of other crops, e.g. corn, beans or rice, planted among the young coffee-trees; he also receives the value of the fourth year's coffee harvest.

(ii) The 'tenant' does all operations at his own risk and after six years the coffee-grove becomes his.

(iii) A kind of partnership between owner and 'tenant' whereby profits are shared equally between them over an eight-year period.

Whichever contract George chose (and he wasn't quite sure which it was!) he soon became an independent landowner, and now owns 130,000 trees and is one of the most influential people in North Paraná. His story confirms that it is possible to rise from the bottom to the top in this new rural society which can thus claim to possess an element of democracy. It is significant, however, that George has now to assume the traditional role of *patrón* to his Brazilian peasant workers who, in many instances, seem unable to accept any life other than the traditional one of landless and relatively unambitious labourer, willing to accept the advice and 'protection' of his master. A quarrel between two of George's employees called Manoel and Antonio is a case in point.

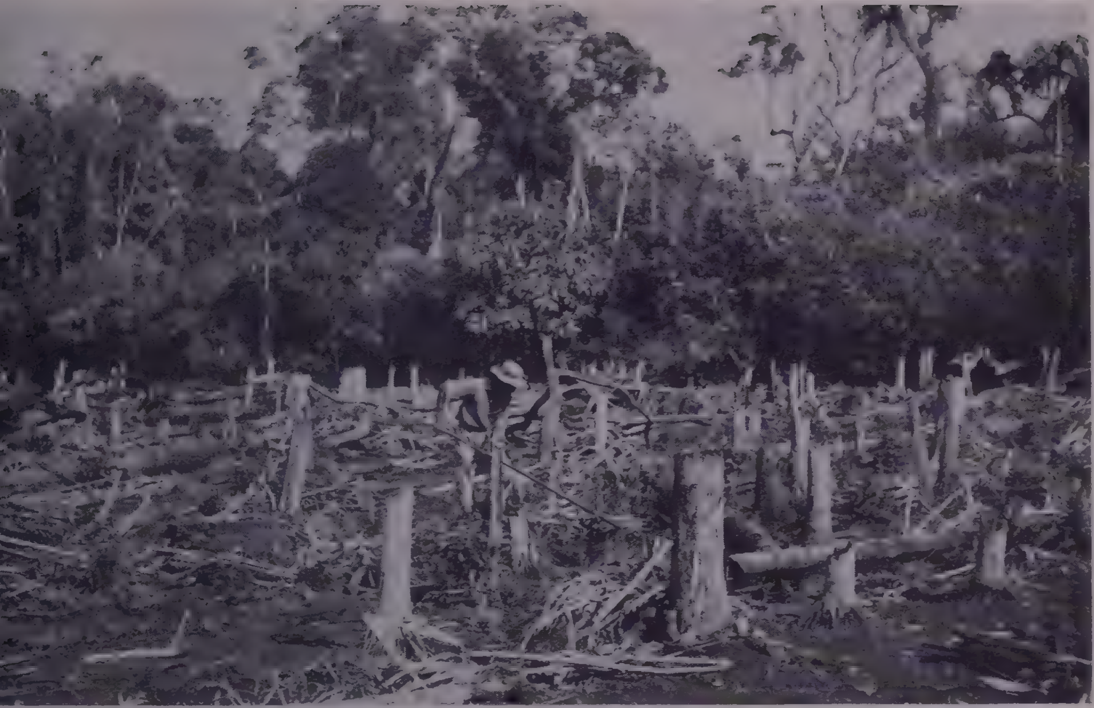
Antonio had been responsible for arranging for Manoel a journey of many kilometres to meet a commercial representative on behalf of the *fazenda*. It was a long trip and Manoel was obliged to stay overnight and return home next day. On getting back, Manoel rushed over to see Antonio, alleging that his expenses were more than the amount Antonio had given him for the journey: 50 centavos (½d) more! It was a matter of honour between them and neither would yield, so each prepared to kill the other. There was no longer room for both of them on the *fazenda*. George was called in and gently explained to Antonio and Manoel that the death of either of them would profit no-one. But they would not be reconciled until George cleverly arranged for



A. J. Thornton

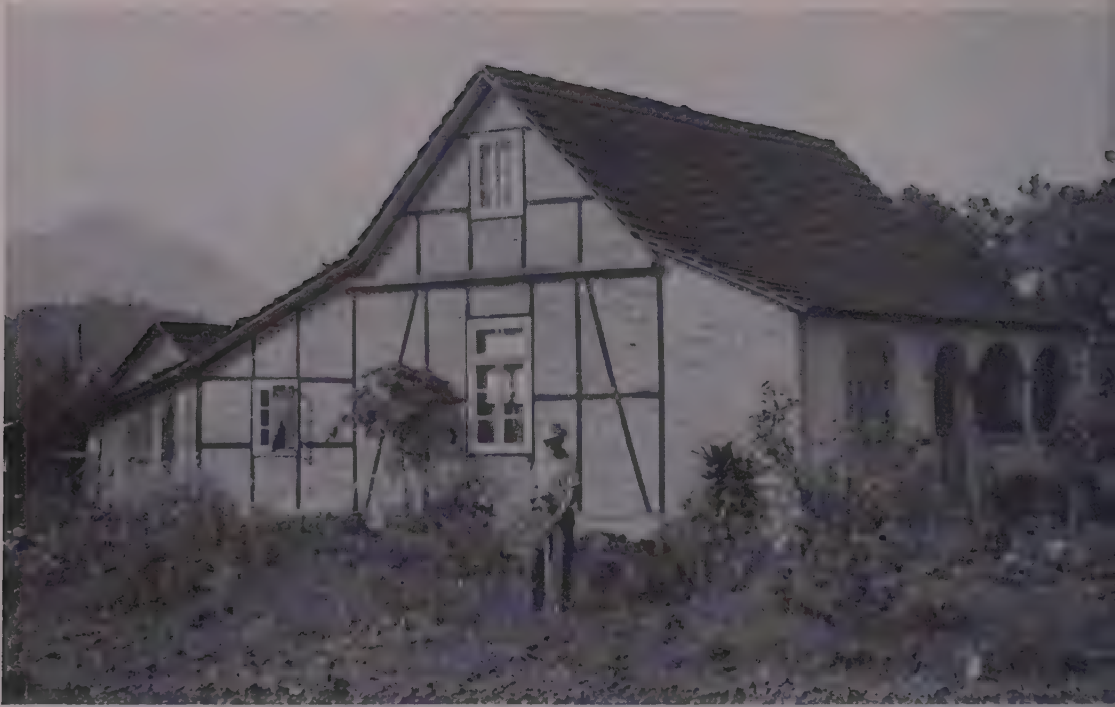
All photographs, except two, by the author

The virgin forest-land in South Brazil is being developed for farming by settlers from many parts of Europe and from Japan. (Above) *Buses on a new road through partly cleared forest near Maringá.* (Below) *Carting* bracatinga *firewood, the most important fuel in Brazil, on the Curitiba plateau*



(Above) *An early stage in forest-clearance for coffee-growing near the River Ivaí. By the time the coffee-plants are producing the stumps will have been removed.* (Below) *A mature coffee-plantation. Coffee is the most important cash-crop in Brazil, but in north Paraná it is liable to frost damage*

By courtesy of the Brazilian Government Trade Bureau



Settlers in South Brazil tend to put up buildings which strongly resemble those of their home countries. (Above) *The half-timbered farm-houses of Pomerania are reflected in this German settler's house in the State of Sta Catarina.* (Below) *A characteristic pattern of mixed agriculture in the same German area*

the transfer of Antonio to another *fazenda.* No face was lost by either side and no murder was now necessary.

The story shows the extremes to which the Brazilian worker is prepared to go to defend his occupational honour, and the way in which he leans on his *patrón* for advice. It is odd, and yet typically Brazilian, that within the new system of independent landownership established in the Paraná, elements of the working of the old latifundia system so characteristic of the State of São Paulo should be in evidence on the larger *fazendas* where the *colono* receives a monthly wage for his work according to the number of trees in his charge and the number of bags of coffee he harvests. There is also the special hired worker, the *camarada* or *peão*, who receives a fixed sum for doing a specific job, e.g. felling of woodland. One man or two women and children may look after 4000-4500 coffee-trees in this district.

The landscape transformation in northern Paraná has been truly remarkable. The stages involved are: (1) the low trees and undergrowth are slashed with a bill-hook; (2) the cut vegetation is then allowed to dry; (3) the big trees are felled on top; (4) the lot is fired at the end of the dry season in August or September; (5) holes about 18 inches square and 9 inches deep are dug to accommodate six groups of three or four coffee-beans planted in the hole, whose surface is covered with flat pieces of timber for extra warmth and general protection during the first twelve to eighteen months of growth. After three years the coffee-plants are three feet high and by the fourth year yields of coffee-beans are in the order of 20 to 30 bags (of about 130 lbs apiece) per 1000 trees on *terra roxa*, only 15 to 20 bags on the sandy soils to the west and south. By the sixth year, they are yielding 100 to 120 bags on the *terra roxa*, and 80 on the sandy soils. It has been estimated that a coffee-grove on virgin *terra roxa* here can remain economically productive for up to 30 or 40 years *without fertilizer* (about 15 years on sand) but these new lands around Maringá and Cianorte are as yet unproven.

There is, for example, the frost hazard which in 1953 and 1955 caused severe damage to literally millions of coffee-trees. Production is relatively negligible now (1956) and will not recover properly till 1958, provided there is no more frost! To combat this hazard it would surely be advisable to broaden the basis of Paraná farming, to conserve the long-term fertility of the soil by manuring the ground more (e.g. with rice-husks) and to adopt varied rotational cropping.

From Maringá we travelled through Londrina to Assaí, a remarkably self-contained Japanese colony. A well-organized landscape of small Japanese family farms surrounds Assaí. Cotton, coffee and maize are the main crops grown, cotton being the chief cash-crop. Orlando explained to me that these Japanese colonists arrived in Paraná in the late 1920s and have kept very much to themselves. "It is very rare indeed for a Japanese to marry outside his own community. I would say that the population of the Assaí district is at least 95 per cent Japanese." "Do you think they will ever be assimilated in time and become 'Brazilian'?"

Though Japanese colonists have been settled in Paraná for thirty years and are a valued element in the population they remain a separate community, hardly ever marrying outside it

By courtesy of the Brazilian Government Trade Bureau

Dutch settlers, arriving since 1951, have introduced progressive practices into South Brazilian agriculture. (Above) *Efficiency and cleanliness are characteristic of the farms in the Dutch colony at Castrolândia.* (Below) *Good quality dairy herds have been produced by their pedigree Holstein bulls*

An Italian farmer ploughing the soft wet earth of a rice-field. The Italians began settling over eighty years ago in the States of Sta Catarina and Rio Grande do Sul and introduced rice-growing

I asked. "Only very gradually, if at all," Orlando thought.

Travelling southward we saw our first Araucaria pines, magnificent single-canopied conifers so distinctive that they have been adopted as the State emblem of Paraná. We were witnessing here 'second growth'. Pioneer shifting cultivators (*caboclos*) had removed the 'first growth' by their primitive burning methods. "It is amazing how much of Southern Brazil, contrary to popular and text-book opinion, is still dominated by the *roca* or *capoceira* (shifting cultivation) system," commented Orlando. "These pockets of Japanese and, as we shall see tomorrow and later, Dutch and German settlements resemble islands of progressive, stable agriculture in a sea of *roca*. In remote, mountainous districts, however, many early European colonists have deteriorated into *caboclos* with primitive extensive methods of land-rotation illogically applied on small-holdings. Chief crops are maize, black beans, manioc and sweet potatoes, and the dibble or planting-stick is extensively used. This primitive, inefficient system also means that crop-farming and stock-farming are separated both spatially and economically and this is a real barrier to the spread of more enlightened ways of farming the land with an eye to the future as well as the present.

The following day we located areas of Dutch colonization epitomized perfectly in the Colony of Castrolândia. There was every possible contrast with the *roca* system and with everything we had seen before. "This is not Brazil; this is Holland," Orlando dryly remarked. One of the leading personalities told us the story of Castrolândia as we sipped hot, milky coffee (so unlike the smooth, black coffee we had relished elsewhere) and ate delicious cream pastries. Two Dutch families had launched the settlement here as recently as 1951; now in 1956 there were 65 families, each with its own farm of 50-200 hectares. The original motive for leaving home was the growing realization by the farmers that the sons stood little chance of ever getting farms in Holland. Since 1946 so much Dutch farmland had been claimed by industry and the general problem of over-population was intensified by regularly high birth-rates and low death-rates. Emigration was a necessity and after the loss of the Dutch East Indies new areas were required for Dutch emigrants; Paraná was among the ones chosen.

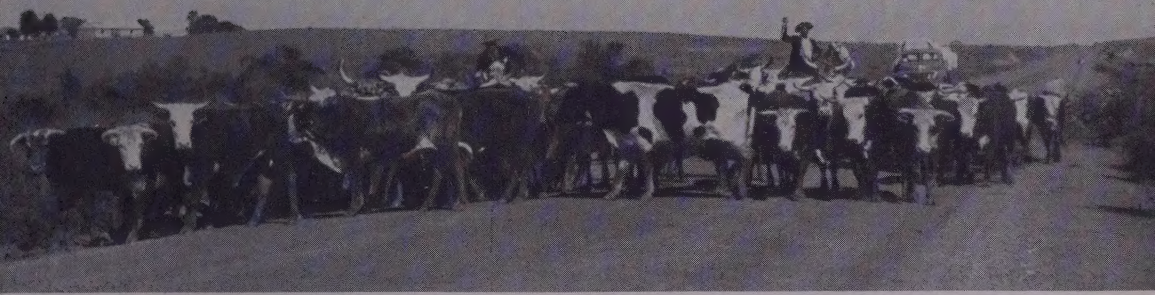
The Brazilian Government allowed the early Dutch families to bring in their pedigree Holstein cattle and also some machinery.

Taking sugar-cane to a factory in the coastal lowlands of Paraná. Here old and new colonists grow sugar, pineapples and bananas although, as elsewhere in the south, shifting cultivation is common

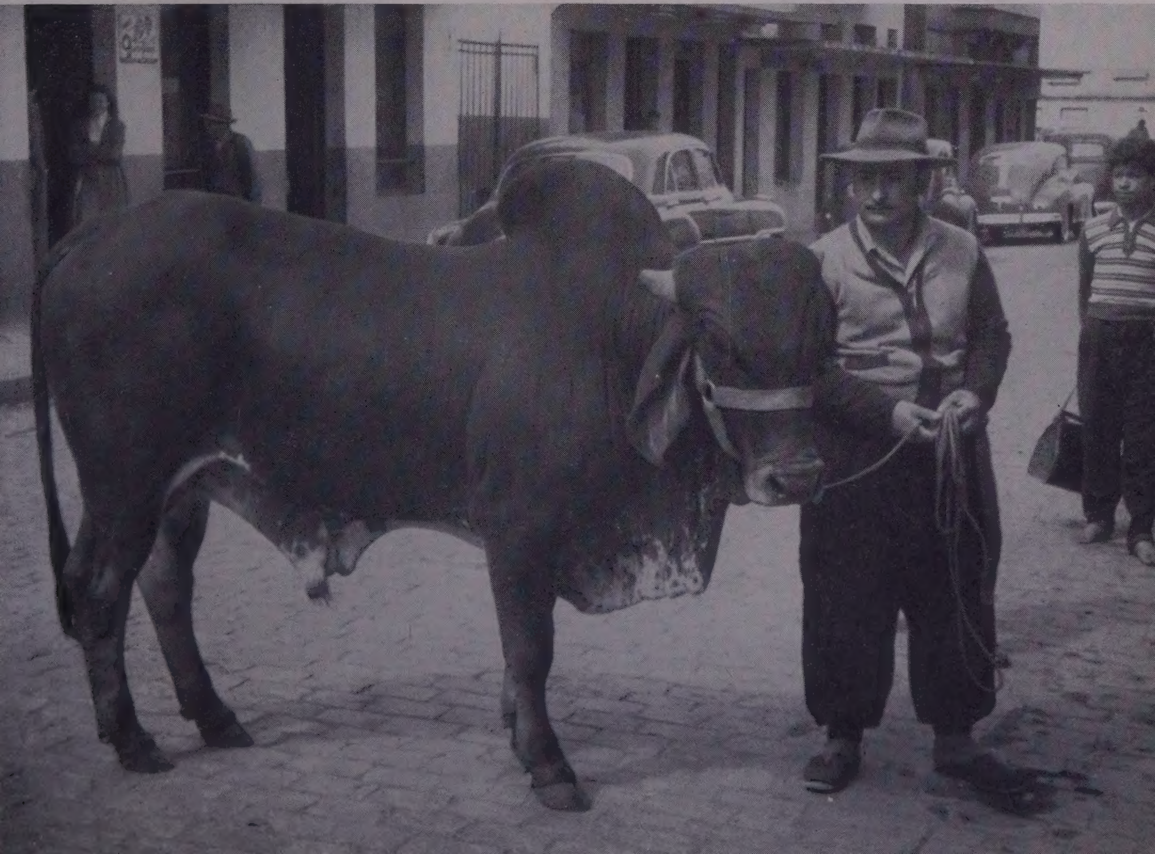
They found the soil poor but responsive to good manurial treatment, and soon established fodder-grasses, fodder-crops such as sweet potatoes, soya beans and turnips, and cash-crops for sale such as wheat and rice. Dairy products, collected on a cooperative basis, in particular delicious cheeses and good quality milk, are the main source of income, but the really distinctive feature is the integration of stock-farming with crop-farming, and the fertilization of the ground as part of an intensive rotational system. This is the complete antithesis of the typically stagnant Brazilian system of shifting cultivation. Orlando supplied a characteristic touch as he gazed at the milking-machines attached to the fat udders in one shippon, and then watched a demonstration of artificial insemination in the next building. "This", he said, shaking his head with a rueful grin, "this is definitely *not* Brazilian! What a way to treat a cow!" Reluctantly, we had to say farewell all too soon to this happy, hardworking, progressive and wealthy community, for equally fascinating landscapes awaited us further south.

The coastal lowlands of Paraná include a zone of new Brazilian and Japanese colonization. The cultivation of sugar-cane, pineapples and bananas is widespread within a general system of shifting cultivation. Coffee is grown here too under the shaded, interspersed rows of banana trees—a technique brought by Portuguese colonists from the Azores which is more in evidence in the major areas of Azorian colonization, viz. on Santa Catarina Island and on the adjacent mainland. Thus colonization started as long ago as 1748. The Azorians brought with them their gregarious tradition and proceeded to sub-divide land-units instead of expanding their properties. They live in distinctive one-storey houses with whitewashed brick or clay walls, and a roof nearly always of two simple slopes. They grow coffee (usually shaded by banana and later *inga* trees), bananas and firewood and, for local consumption, sugar-cane, corn and manioc. Coffee-beans are dried by the side of the house. There are small numbers of cattle. They are generally a stagnant and unprogressive people.

In sharp contrast are the German colonizations of the basins of the Rivers Itapocu and Itajaí-Açu, launched from about 1850. A very consistent pattern of land-use shows a real harmony with the physical landscapes here. The valley floors are in intensive crop



(Above) *Cattle and sheep are raised on the* estancias *in the extreme south of Brazil, a prairie country of rolling grasslands with few trees. The white head and horns of Herefords predominate in this herd.* (Below) *A prize-winning beast in Vacaria with the hump and long, floppy ears indicating Zebu influence*



rotation for corn, manioc, Irish potatoes, barley, and rotation grass. The use of the plough and of heavy and regular applications of farmyard manure are distinguishing features. Small paddocks of permanent pasture occur near the farmsteads which are often at the change of slope, or on terraces, along the sides of the valley. The farm-house and often the other buildings (shippon, barn, etc.) have two-sloped roofs, inclined steeply at the top and gently towards the eaves, and are characteristically decorated with timber-work. The Germans in our party assured us that they were typically Pomeranian farm-houses. The steep slopes of the valley are usually in shifting cultivation producing some maize and manioc and sometimes bananas. The hilltops, however, are left in forest, usually 'second-growth'. Milk, distributed by a cooperative system, firewood (*bracatinga*, a fast-growing tree which burns well) and sometimes pigs are important sources of income. Tobacco is grown locally on the roadside but is much more important around Santa Cruz do Sul in the extreme south, in the State of Rio Grande do Sul. The German colonists had included skilled blacksmiths, tinkers, carpenters, joiners, potters, etc., who became the founders of numerous industries in the larger settlements like Joinvile and Blumenau. Tribute to this traditionally inherited industrial genius was paid when a tiny but vital screw lost from the camera of one of our party was replaced by one that was manufactured on the spot whilst we waited! It made me wonder where else, if at all, such a service could be obtained.

Some Italian settlers in parts of these valleys have established a farm economy based on the production of paddy rice on the alluvial and floodable valley-floors, and on maize and manioc on the lower valley-slopes. The type of house with an arched porch and plastered walls is often preferred by the Italians. The major area of Italian colonization, however, is further south still in the State of Rio Grande do Sul. From the 1870s Italian immigrants began to come in to what was to become the town of Caxias do Sul. Developments in rural metal and textile industries stemmed from the nucleus of skilled craftsmen who had already benefited by 1870 from the effects of the Industrial Revolution in Italy, as had the German colonists further north. In response to this industrial and urban growth an intensive and advanced type of agriculture evolved, focusing on market-gardening and dairy-farming, especially liquid milk production. But a truly distinguishing feature is the cultivation of the vine round Caxias do Sul and the frequency of wineries in the town. We visited quite a few of them one morning (it was difficult to keep count) and were ultimately educated to the quality of the local wines. The hardy and resistant Isabella grape is grown here. Osiers (pollard willows) are grown locally to provide material for basket- and furniture-making. Orlando had every praise for the viticulture of the Italians, but had a few harsh words to say about the primitive way in which wheat was grown. "A much more intensive production is possible," he thought, since there are already thirty-five flour mills in Caxias do Sul.

A final *churrasco*, complete with *yerba maté* (Paraguayan tea), at the vast "Estancia de Sege" (15 square miles in extent) near Rio Pardo gave us a real glimpse at life on the South Brazilian prairie. The Portuguese owner had a very mixed labour-force including Europeans, Negroes and mulattoes. The *estancia* had 4600 head of cattle (especially Herefords, Shorthorns and Flemish), 2200 sheep (by Corriedale rams) and 300 horses. Considerable acreages of wheat, oats, rice and maize were also cultivated. A cooperative *frigorifico* was in process of construction and is due to open in January 1957. It will serve about 200 *estancias*. It is significant that only here in the extreme south of Brazil is mutton produced and eaten in any quantity. The grassland is almost entirely natural and unfertilized, but future intensification of production may lead to surface treatments and re-seedings.

This fascinating miscellany of new agricultural colonizations in South Brazil contrasts with the traditional Brazilian pattern. Here stable commercialized types of agriculture, geared both locally and nationally to the Brazilian economy, have taken firm root; a development which suggests that in this part of the country, at least, a relatively continuous prosperity may at long last be achieved, in contrast to the repetitive sequence of temporary prosperity and rapid decline which has so often been the story of Brazilian farming elsewhere. Orlando may be allowed his final comment: "The Brazilian farmer will have to learn how to plant and care for the tree before collecting the fruit. So universally in the past has he rushed to collect the fruit without even planting the tree!"